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ABSTRACT

Designed to help administrators plan and implement an emergency medical technician (EMT) training program, this course guide is intended for use with a series of fifteen instructor lesson plan modules. (The EMT-Paramedic is described as a professional in emergency medical care who has successfully completed a training program that includes formal coursework, practical instruction, and field internship, who always works under the direction of a physician, and who is competent in recognizing and assessing medical emergencies and rendering actual care services at the scene of an emergency, in an advanced life-support ambulance, and other appropriate settings.) Following a list of competencies needed by the paramedic, the course design and planning considerations are given. Included is a discussion of the recommended class size, class schedule, facilities and equipment, student prerequisites, and faculty structure and qualifications. Course implementation considerations are also given including the use of the fifteen instructor lesson plan modules, testing and evaluating the students, and certification of students upon completion of the program. The concluding section outlines program administration steps. Appendixes include standards for emergency medical technician-paramedic performance, course goals by module, course content outline, suggested instructional time by module, prerequisites and sample scheduling, and recommended minimum equipment. (JH)

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ED158058

# National Training Course
# EMERGENCY MEDICAL TECHNICIAN
# PARAMEDIC
## INSTRUCTOR'S LESSON PLANS
## Module COURSE GUIDE

CE 017 514



**U.S. Department of Transportation** / *National Highway Traffic Safety Administration*

## THE EMT OATH*

*Be it pledged as an Emergency Medical Technician, I will honor the physical and judicial laws of God and man. I will follow that regimen which, according to my ability and judgment, I consider for the benefit of my patients and abstain from whatever is deleterious and mischievous, nor shall I suggest any such counsel. Into whatever homes I enter, I will go into them for the benefit of only the sick and injured, never revealing what I see or hear in the lives of men.*

*I shall also share my medical knowledge with those who may benefit from what I have learned. I will serve unselfishly and continuously in order to help make a better world for all mankind.*

*While I continue to keep this oath unviolated, may it be granted to me to enjoy life, and the practice of the art, respected by all men, in all times. Should I trespass or violate this oath, may the reverse be my lot. So help me God.*

Charles Gillespie, M.D.

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*The NHTSA extends its sincere gratitude for permission to reprint this excellent oath as a guide for all EMT's who are serving today and for those who will serve in the future.

National Training Course

# EMERGENCY MEDICAL TECHNICIAN

## PARAMEDIC

INSTRUCTOR'S LESSON PLANS

# COURSE GUIDE

U.S. Department of Transportation / National Highway Traffic Safety Administration

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Anyone among you who aspires to greatness must serve the rest; whoever wants to rank first among you must serve the needs of all.

St. Mark 10, 44–45

I shall pass this way but once,
any good therefore that I can do,
or any kindness that I can show,
LET ME DO IT NOW!
Let me not defer or neglect it,
For I shall not pass this way again!

Peter Hein "Grooks"

The road that stretches before the feet of a man is a challenge to his heart long before it tests the strength of his legs.

St. Thomas Aquinas

# FOREWORD

Each year over 100,000 people needlessly die in the United States, because of the lack of adequate and available emergency medical services. Most of the deaths occur from coronary disease, accident injury, burns, poisoning, alcohol and drug overdose, immature infancy, and acute phychiatric disorders. The Federal Emergency Medical Services (EMS) program is directed toward saving these lives and assisting the millions of other people that are in potential death and disability situations.

A major need of the prehospital portion in the EMS systems program has been to develop a national standard for training personnel in advance life-support techniques and to define the standard skills required of the Emergency Medical Technician (EMT)-Paramedic. The National Highway Traffic Safety Administration, Department of Transportation, has taken the lead to develop the standards of the EMT-Paramedic training course. The curriculum is comprehensive and consists of three components: didactic, clinical (in-hospital), and field internship. The course is available in modules to permit presentation appropriate to local needs and resources. But most of all, the course sets forth specific skills, comprehensive knowledge, and performance competence that are necessary for a national standard of instruction.

It is the mission of the Interagency Committee on Emergency Medical Services to provide national coordination of the Federal EMS program and to insure communication between the 23 major agencies and departments involved in emergency medical services. The EMT-Paramedic course has been reviewed and approved by the Interagency Committee on Emergency Medical Services. The course is eligible for Federal funding through appropriate grant application mechanisms. The Department of Transportation, the Department of Health, Education, and Welfare, and the Department of Labor have specifically endorsed this training course for funding.

The National Highway Traffic Safety Administration, Department of Transportation, is to be complimented on the completion of this excellent curriculum that will assist in the improvement of standards and quality of emergency medical care to all citizens.

Louis M. Heilman, M.D.
Chairman, Interagency Committee
on Emergency Medical Services

# PREFACE

There are currently an estimated 8,000–10,000 paramedics in the United States, working out of large urban centers and rural volunteer rescue squads, performing skills ranging from simple bandaging to transthoracic cardiac pacing, and annually rendering care to hundreds of thousands of sick and injured. The paramedic is no longer an isolated phenomenon of a few major emergency medical systems; he has established himself as an allied health professional who is here to stay. With recognition of the paramedic's professional status has come concern for the development of standards of performance that, in the final analysis, depend significantly on standards of training.

Cognizant of these needs, the U.S. Department of Transportation (DOT), National Highway Traffic Safety Administration (NHTSA), has sought to develop instructional materials to guide the training of emergency medical technicians at various levels. The major question facing those of us involved in developing this course has been: What should the paramedic know in order to most effectively carry out his role in health care? There are really two questions involved. First, what skills must the paramedic possess in order to function effectively in the field; and second, what knowledge should he have in order to use those skills with judgment and capability?

The determination of requisite skills is the simpler of the two problems, for skills are, by their very nature, easily identified, and essential life-support techniques can be specifically defined. A task force of the National Academy of Sciences/National Research Council arrived at a list of minimum skills that must be achieved by paramedics, and this list reflects, to a large extent, what is already being taught in the majority of programs.

The real difficulty lies in identifying the knowledge objectives for the paramedic. On the one hand, it is clear that the paramedic should not simply be an automaton who performs by rote at the command of a physician; understanding of basic pathophysiology and discriminative judgment are necessary to his effective functioning. Nor, on the other hand, should he have the education of a physician. What, then, should the paramedic know? There is no simple list of facts, no well-defined set of information; nor is such a list likely to be written. Different physicians charged with paramedic training will, and should, differ in their ideas of what ought to be taught in the way of underlying principles and supporting factual information. In our own work, we have been guided by two general principles in selecting content:

- The course must impart sufficient knowledge to enable the paramedic to carry on life support in the field, even if telecommunication with the physician should be interrupted. Thus, the paramedic must have a knowledge of pathophysiology to make basic diagnostic hypotheses and an understanding of the rationale of therapy to apply his skills in appropriate circumstances.
- The knowledge objectives should be geared to the special constraints of care in the field, and unnecessary distinctions should not be made. The nuances of differential diagnosis of the acute abdomen, for example, merit less emphasis than differentiation of cardiac asthma from asthma, since in the former case the treatment in the field will not be greatly affected by making an accurate differential diagnosis, while in the latter case accurate differentiation is crucial in the choice of therapy. Thus, priority has been given to areas where it was felt the paramedic's knowledge would make a difference in the field.

Many of the modalities of management taught in this course require a physician's order, whether in person, by telecommunications, or through standing orders. The management is described in detail so the paramedic may become familiar with the actions that might be expected of him in various circumstances. Local customs and regulations will determine the mechanisms by which procedures are authorized, if at all, in any given system. Thus, for example, while the technique of endotracheal intubation is described, it is not anticipated that the paramedic will ordinarily carry out this procedure solely on his own initiative. He should, however, be familiar with the technique and be prepared to perform it if authorized to do so by his medical director.

The principles of extrication/rescue are not emphasized in this course because, strictly speaking, they are not part of a paramedic's job as a health professional. It is assumed, however, that students taking this course have been certified by the State EMS agency and have, therefore, learned the fundamentals of extrication/rescue from the prerequisite NHTSA *Crash Victim Extrication Course*. If, however, a student paramedic has not learned the fundamentals of extrication/rescue, they should be included in this course (Module XIV: Rescue Techniques). In this latter case, the NHTSA *Crash Victim Extrication Course* or an approved equivalent should be given as a minimum.

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An acknowledgment is often at best a woeful understatement because those whose names can be mentioned only briefly have contributed in such large measure to this course. The manual, and curriculum of which it is a part, should rightfully be viewed as a cooperative venture.

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# CONTENTS


| | Page |
|---|---|
| Foreword | v |
| Preface | vii |
| Acknowledgments | ix |
| Course Guide | 1 |
| Introduction | 1 |
| Purpose of the Course Guide | 1 |
| Objective of the Course Guide | 2 |
| Description of the Occupation | 2 |
| Competency of the Paramedic | 2 |
| Ethical Standards | 3 |
| Course Description | 3 |
| Course Design | 5 |
| Course Planning Considerations | 6 |
| Course Implementation Considerations | 15 |
| Program Administration | 21 |
| Appendixes | 35 |
| Appendix A. Standards for Emergency Medical Technician-Paramedic Performance | 35 |
| Appendix B. Course Goals by Module | 42 |
| Appendix C. Course Content Outline | 59 |
| Appendix D. Suggested Instructional Time by Module | 69 |
| Appendix E. Prerequisites and Sample Scheduling | 71 |
| Appendix F. Recommended Minimum Equipment | 75 |

# COURSE GUIDE

## INTRODUCTION

The program described in this text is based on recommendations of the Task Force on Emergency Medical Technicians of the National Academy of Sciences/National Research Council (NAS/NRC). Interim materials were developed by the Springfield Medical Center, Springfield, Massachusetts, and from experiences derived from advanced emergency care systems across the country. The program is designed to be presented in its entirety or in segments, depending on local needs and resources. If the student successfully completes the entire program, he will have met the criteria established by the NAS/NRC Task Force on Emergency Medical Technicians as an EMT-Paramedic.

It should be noted that while an estimated 500 to 800 hours of instruction will be required to bring the student the full level of paramedic competency, the depth of this competency will depend in large part on the student's exposure to emergency situations during the clinical and field internship phases of instruction.

## PURPOSE OF THE *COURSE GUIDE*

This *Course Guide* has been prepared to help administrators plan and implement a training program to develop EMT-Paramedics. It contains a description of the training program; suggestions for course planning, including class size, scheduling of classes, recommended facilities, training aids, and instructor and student prerequisites; guidelines for conducting the course; recommendations for student evaluation; and suggestions for continuing education programs. In addition, a procedure for the planning and implementation of this paramedic training program is suggested. Finally, the *Course Guide* is a statement of policy that sets forth minimum standards for developing the structure and quality of paramedic training programs and that can serve as a basis for certification or accreditation.

## OBJECTIVE OF THE *COURSE GUIDE*

The standards set forth in this course guide are to be used as a guide for the development and evaluation of EMT-Paramedic training programs. Students enrolled in the programs are taught to work with, and under the direction of, physicians (including standing orders) in providing emergency medical care in the field, at the scene, or during transit to an emergency-care center.

## DESCRIPTION OF THE OCCUPATION

The EMT-Paramedic is a professional in emergency medical care who has reached that status through successful completion of a training program that includes formal coursework, practical instruction, and field internship. He is competent in recognizing and assessing medical emergencies as well as in rendering actual care services at the scene of an emergency, in an advanced life-support ambulance (intensive care vehicle), and in other appropriate settings such as in-hospital emergency departments and intensive care units.

The paramedic always works under the direction of a physician—both while in training and after he has qualified.

Essential attributes of the EMT-Paramedic include intelligence, the ability to relate well to people, a capacity for calm and reasoned judgment, and an orientation toward service. As a professional the paramedic sees the patient as a person and respects the mores of his family.

## COMPETENCY OF THE PARAMEDIC

Given knowledge, skills, and field experience, the EMT-Paramedic should have competency in:

- Recognizing a medical emergency, assessing the situation, managing the emergency care and light extrication, and directing and coordinating his efforts with those of persons from other agencies who may be involved in the care and transportation of the patient(s)
- Making an appropriate assessment, assigning priorities of emergency treatment, and recording and communicating data to the designated medical command authority (MCA) or other responsible physician
- Initiating and continuing emergency medical care under medical telecommunications control including (1) recognizing and initiating appropriate

invasive and noninvasive treatments for such conditions as life-threatening arrhythmias, shock, psychological crises, airway and respiratory problems, and trauma, and (2) assessing and reporting the patient's response to that treatment and initiating appropriate changes as required under physician direction

- Functioning under standing orders in the event the telecommunication equipment cannot be immediately utilized and exercising personal judgment based on customary practice in treating or stabilizing the patient. (It is clear that the paramedic should be more than an automaton who performs by rote at the command of a physician; he must understand basic pathophysiology and exercise good judgment to be effective.)
- Directing and coordinating the transport of the patient(s) by selecting the best available method(s), after approval of medical command authority
- Recording in writing details related to the patient's emergency care and to the incident
- Directing the maintenance and preparation of emergency care equipment and supplies

## ETHICAL STANDARDS

Recruitment and matriculation practices must be nondiscriminatory with respect to race, color, creed, sex, or national origin.

Announcements and advertising about the program must reflect accurately the education and training being offered.

The program must be educational, and students must use their scheduled time for educational experiences.

There must be adequate safeguards for the health and safety of students, faculty, and patients.

Costs to the student must be reasonable and accurately stated and published.

Policies and processes for student withdrawal and refunds on tuition and fees must be fair, published, and made known to all applicants.

## COURSE DESCRIPTION

This training course is organized to provide the student with knowledge about the acute, critical differences in physiology, pathophysiology, or clinical symptoms, as they pertain to the prehospital emergency medical care of the infant, child, adolescent, adult, and geriatric patient. The student must have an

opportunity to acquire clinical experience and practice skills related to the emergency medical care of these patients.

The course consists of three components: classroom, clinical (in-hospital), and field internship. The time required to complete each component will depend on the ability of each student to successfully demonstrate that he has acquired the necessary knowledge and skills.

The course is structured as follows:

- *Classroom*: Lectures, discussions, and demonstrations presented by physicians and others competent in the field.
- *Clinical*: Instruction and supervised practice of emergency medical skills in critical care units, emergency departments, obstetric units and operating rooms (including anesthesia), and psychological crisis intervention centers.
- *Field Internship—Critical Evaluation of On-the-Job Performance*: Experience as an extra person on an intensive care vehicle (ambulance). This unit must have telecommunication with medical command authority, and equipment and drugs necessary for advanced life support. The student must be supervised by a physician or nurse qualified in emergency medicine or by a State or nationally certified EMT-Paramedic. The internship must take place within a system that provides paramedic care under medical direction, provides all necessary drugs and equipment, evaluates the care provided sufficiently to insure its quality, and conducts a well-defined continuing education program for personnel. To provide optimal internship training, the system must include biomedical telecommunications.

Courses and topics of study are achievement oriented and provide the student with:

- The necessary knowledge and competency to accurately and reliably perform the functions and tasks stated and implied in the "Description of the Occupation" and "Competency of the Paramedic."
- Instruction that encompasses (1) an introduction to the responsibilities of the occupation including interprofessional responsibilities, career pathways in emergency medical services, and an introduction to patient history taking and physical examination skills; (2) biomedical communications to include telemetry, use and maintenance of equipment, legal responsibilities, record keeping, emergency and defensive driving, and principles and techniques of light extrication; (3) pertinent anatomy, pathophysiology, history taking, physical examination, assessment and

emergency treatment relating (a) to the cardiovascular system, including recognition of selected arrhythmias associated with potential, acute cardiac compromises; (b) to the respiratory system, including pneumothorax, chronic obstructive pulmonary disease, acute asthma, trauma to the chest and airway, respiratory distress syndrome, and acute airway obstruction; (c) to chest and abdominal trauma; (d) to medical emergencies including acute abdomens, infections, endocrine disorders (diabetes mellitus), and rape; (e) to the central nervous system (medical) in regard to hemorrhagic stroke, vascular seizures, drug overdose, drug incompatibilities, and alterations in levels of consciousness; (f) to the central nervous system (trauma) in regard to closed and open head injuries; cervical, thoracic, lumbar, and pelvic injuries; and alterations in levels of consciousness; (g) to musculoskeletal trauma, including massive external hemorrhage fractures and dislocations of the extremities and also, all fractures and dislocations of the cervical, thoracic, lumbar, and pelvic regions, emphasizing those fractures and dislocations associated with the peripheral neurovascular system, but excluding those with nerve compromise; (h) to obstetrical and gynecologic emergencies including complications of the 1st, 2d, and 3d trimesters, bleeding, atypical presentations, and eclampsia of primiparous and multiparous females; vaginal bleeding; and rape; (i) to pediatric emergencies including respiratory conditions such as croup and epiglottitis, infections, seizures, child abuse, aspirations, poisonings, and neonatal transfers; (j) to psychiatric emergencies including negotiations, diagnosis of, and intervention techniques with suicidal, assaultive, destructive, resistant, anxious, bizarre, confused, alcoholic, drug-addicted, toxic, amnesic, paranoid, drugged, raped, and assaulted patients; and (k) special situations including carbon monoxide and other noxious inhalations and poisonings, and, as needed, in regard to near-drowning, submersion, overexposure to hot- or cold-weather extremes, electrocution, high altitude incidents, burns, environmental/industrial exposures; and (4) other knowledge and competencies as appropriate.

Some specific standards for EMT-Paramedic performance are contained in Appendix A.

## COURSE DESIGN

The program is divided into 15 modules. Each module is a complete, self-contained package directed toward the attainment of skills and knowledge in a subject area. The emphasis of each module is on (1) the identification of the

skills and knowledge required of the student, (2) methods to assist the student in the accomplishment of these objectives, and (3) a procedure for the evaluation of student competency. Each module can be presented individually or combined with other modules to construct a course for a selected group of students. The program uses this format so that sponsoring institutions interested in developing only specific skills in the students can present the appropriate modules. Also included in each module are optional skills that have been demonstrated in prehospital care systems to be effective in the field when performed by paramedic personnel; however, these skills are not necessary to meet the criteria for an EMT-Paramedic as defined by the NAS/NRC Task Force. (A list of the skills is presented in App. B by module, and a course content outline is provided in App. C.)

The training program is presented using a variety of teaching strategies—lectures, group discussions, demonstrations, laboratory demonstrations, simulated practice sessions, clinical experience, and an internship on the vehicle. The thrust of this training is to develop specific skills and to develop general principles of diagnosis and treatment based on fundamentals of normal anatomy and physiology and of pathophysiological processes. Students are encouraged to apply the general knowledge and principles presented in the course to a broad spectrum of specific patient conditions.

Because the emphasis of the training is on the development of student competency, the number of hours selected is but a reference to be used when planning the course and should not be used as a measure of successful completion. A student will have successfully completed the course when he has demonstrated mastery of the skills and knowledge expected of him, irrespective of the hours involved. The exact number of hours has not been designated because it will vary according to the needs within a given State or area. A suggested range of hours required to present each module and scheduling alternatives, however, may be found in Appendixes D and E, respectively.

## COURSE PLANNING CONSIDERATIONS

### Institutional Sponsorship and Clinical Affiliations

The sponsoring institution of an EMT-Paramedic program shall be an accredited postsecondary educational institution such as a senior college meeting comparable standards for education in this field. All educational institutions must be affiliated with accredited medical centers or hospitals that are capable of supporting adequate EMT-Paramedic training programs and that are associated with a planned and ongoing emergency medical care system that provides paramedic services.

In programs where classroom instruction and practical teaching are not provided in the same institution, accreditation shall be given to the institution responsible for the academic preparation (student selection, curriculum, academic credit, et cetera). The educational administrators shall be responsible for assuring that the activities assigned to students in the clinical setting are educational.

Clinical affiliations should be established only with institutions that provide competent medical direction and continuing assessment of student performance.

Students should be given experience with patients of both sexes representing a broad range in age and in kinds of common emergency medical care problems.

## Class Size

The emphasis of the training program for the EMT-Paramedic is the development of advanced emergency medical care skills and knowledge to an acceptable level in each student. To facilitate this development, there must be ample opportunity for each student to practice and gain experience in simulated and clinical settings. To insure this opportunity and to maximize student/instructor interaction, the classes must be kept relatively small.

The logistics and administrative considerations of the sponsoring institutions should determine the maximum number of students per class; specifically, the number that can be accommodated over a specified period of time without decreasing the efficiency or operation of a clinical unit.

Rather than indicating a class size, the following instructor/student ratios are suggested:

- *Classroom:* For classroom lecture sessions, the number of students need not be limited. In most instances, the class size will not exceed 20 students, except where special circumstances exist.
- *Practice Sessions:* For practice sessions, the class size will be limited by the availability of equipment and instructors to assist and supervise the students. In general, it is recommended that there be no more than 10 students for each instructor during the practice sessions.
- *Clinical Experience:* Only two students should be assigned to a clinical unit at a given time, with the exception of the clinical experience with the intravenous team; the vehicle should be assigned only one student at a given time; the morgue experience can be expanded to include up to four students, or a greater number if the facility is available.

As stated earlier, the class size will be influenced by local resources, but the limits mentioned above should be considered.

**Student Prerequisites**

This course has been developed for ambulance personnel who will provide advanced emergency care under a supervising physician through direct radio communication. The students may be individuals from municipal, proprietary, volunteer, and hospital services. To be eligible for the EMT-Paramedic training program, it is suggested that the student:

- Have met the State or national requirements for EMT-Ambulance.
  - — Have a high school diploma or its equivalent.
  - — Be at least 18 years of age by the beginning of the training program.
- Have been an active member of an emergency/rescue squad for a minimum of 1 year as an EMT-Ambulance.
- Have evidence of successful completion of the 81-hour DOT/EMT course or its approved equivalent.
- Have for at least one year demonstrated the ability to function in an emergency situation, that is, as an ambulance attendant, fireman, military corpsman, emergency department or intensive care unit technician, or nurse (critical care).

  NOTE: This requirement may be waived under special circumstances upon recommendation by the medical/program director, program coordinator, and concurrence of the advisory committee. Such an exception may be applied to administrative, supervisory, instructional, or counseling personnel within a system structure. It should not apply to those engaged in the actual involvement in EMT services in the field. In any event, the priority for training should always go to the EMT-Ambulances actively engaged in the provision of emergency medical care in the field.

- Be associated with an ambulance or rescue service, emergency department, or intensive care unit that is equipped or will be equipped in the near future for advanced emergency care, such as, hospital/vehicle radio communications, cardioscope/defibrillator, intravenous supplies, and drugs.
- Have acceptable recommendations from his present ambulance administrator and medical adviser.

- Meet any additional requirements imposed by the sponsoring institution or the State in which the course is given.

Any selection process should include some type of interview by a selection committee, preferably composed in part of health professionals with experience in prehospital care. This may be the advisory committee or a specially selected committee for this purpose.

**Faculty—Structure and Qualifications**

*Medical Director:* The overall course is designed to be conducted under the supervision and direction of a physician. He should be responsible for insuring an accurate and thorough presentation of the medical content of the course and for evaluating and certifying students successfully completing the training program. A physician recruited for the position of medical director should:

- Demonstrate an interest in the improvement of emergency medical services and knowledge of the problems involved.
- Demonstrate a willingness and ability to further his own education in areas of emergency care with which he may not be entirely familiar.
- Have extensive critical or emergency care experience, for example, as a full-time emergency department physician.
- Demonstrate a willingness to cooperate with the providers of ambulance service in the local area.
- Have experience on an ambulance vehicle or be willing to make provisions to gain experience on the vehicle.
- Be thoroughly knowledgeable of, and capable of demonstrating, all skills presented in the Basic EMT and the EMT-Paramedic training courses.
- Have experience instructing students at a level similar to that of EMT's.

*Course Coordinator:* To assist the supervising physician in the presentation of the course, it is recommended that one or more individuals be made responsible for course coordination. The course coordinator should be selected using the criteria outlined for selecting the supervising physician, although the coordinator need not be a physician. The course coordinator will oversee the operation of the program and will act as the liaison between students, program staff, and the hospital. More specifically, the course coordinator will:

- Process applications and assist in the selection of students.
- Maintain a complete inventory of all training equipment available.
- Assist in the selection of instructors.

- Schedule classes and assign instructors.
- Conduct instructor and clinical preceptor orientation.
- Assure that the required equipment and materials are available at each class.
- Assist in the instruction, where appropriate.
- Monitor and evaluate classroom activities, including practice sessions.
- Schedule students for the in-hospital clinical experience.
- Monitor and evaluate clinical experience.
- Assist in the coordination of the examination sessions, including the preparation of evaluation materials.
- Provide information concerning the EMT training program to interested individuals or organizations.
- Counsel trainees on an individual basis.

A course coordinator assuming the above responsibilities provides program consistency throughout, even though a variety of instructors may be used for the classroom presentations. The students can identify this person as a link between themselves and the hospital staff.

*Clinical coordinator:* The clinical coordinator is to be appointed by the medical program director with the concurrence of the program coordinator. He should preferably be an emergency care nurse or an EMT-Paramedic familiar with the function and staff of each of the hospital departments. He will serve as an assistant to the course coordinator in all matters relating to students, with special attention being given to liaison between students and staff, student records, rescheduling, study, and classroom needs. Meetings will be held periodically with the medical/program director and program coordinator concerning clinical scheduling, student problems, and individual student evaluation.

*Instructors:* The instructors should include physicians, nurses, allied health professionals (e.g., respiratory therapists), and experienced emergency medical technicians knowledgeable in the specific subject matter of a given lesson. For example, the anatomy and physiology could be presented by a nurse, the cardiology presented by a cardiologist, and the use of the adjunctive equipment for airway maintenance by an anesthesiologist. For the clinical sessions, a physician, nurse, or other allied health professional (including an experienced EMT) should be assigned direct responsibility for the activities of the students. When recruiting potential instructors, it is suggested that those selected:

- Have extensive critical or emergency care experience.
- Have experience instructing students at a level similar to that of EMT's.

- Have a level of medical knowledge above that required of the EMT-Paramedic.
- Be familiar with the skills presented in the basic EMT and the EMT-Paramedic training programs.

**Class Schedule**

The course is designed to be presented as either a full-time or part-time program. For full-time professional ambulance personnel, the full-time schedule may be appropriate. Professional part-time and volunteer ambulance personnel, however, because of limited time, require a program that can be presented in the evenings and on weekends in segments over an extended period of time, not to exceed 1 year.

The training materials as developed are divided into modules, which are organized around content areas, for example, pharmacology—Module IV. Each module is a self-contained package that identifies the classroom activities and clinical experience required to complete the module and learn the content area. Also, each module includes a list of prerequisite modules that should be presented with it. (See App. E.)

In many instances, because of a lack of full-time ambulance personnel or limited local resources, the presentation of the entire training program for the EMT-Paramedic will not be feasible or practical.

For this reason, the program materials have been developed to allow flexibility in scheduling. For example, if the local medical community wishes to present a course primarily emphasizing coronary care, a shortened version of the EMT-Paramedic training program could be used. The shortened course* should include:

Module I The Emergency Medical Technician
Module II Human Systems and Patient Assessment
Module III Shock and Fluid Therapy
Module IV General Pharmacology
Module V Respiratory System
Module VI Cardiovascular System
Module XV Telemetry and Communications

The abbreviated course would include only those skills necessary in advanced coronary care. Over an extended period of time, not to exceed 6 months, students could avail themselves of the remaining modules to meet EMT-Paramedic requirements. It must be recognized, however, that only those

*See Appendix E.

students completing the entire program outlined in this course guide (exclusive of optional skills) will meet the criteria for EMT-Paramedic as established by the NAS/NRC Task Force.

If the entire program is not to be presented, the following procedure should be used for determining the class content and schedule*:

- Determine the modules that are to be included in the program.
- Determine the requisites for each of the modules, and be sure that all prerequisites are included.
- Once a complete course outline has been developed, determine the length of the total program by calculating the number of hours required for presenting the program. This should be accomplished by the course coordinator and medical director by reviewing the *Instructor Lesson Plans* and determining the amount of time required.
- Prepare schedules for the proposed class. It is desirable, but not absolutely necessary, that the presentation of the modules follow the order of presentation in the training materials. The proposed schedule should reflect the availability of the students and instructors.

NOTE: If the program is to be presented part time, it is recommended that the class meet a minimum of 6 hours per week for classroom lecture and practice sessions, with the clinical experience scheduled independently.

A further explanation of the time required for each module, module requisites, and other intermediate alternatives are presented in Appendixes D and E, respectively.

## Facilities

### *Classroom*

The training program is designed to train personnel who will function as an extension of the physician and medical institution in providing prehospital care to acutely ill or injured patients. The training program, therefore, can be quite effective if it is presented in a medical institution. If the institution cannot provide the necessary facilities for the didactic segment of the program, the classroom lecture and nonclinical practice sessions could be presented at a local educational institution; for example, community college, junior college, area vocational-technical school, or any other facility with necessary space, equip-

*In many instances, the State will have identified intermediate levels that qualify for State certification. It will be necessary to explore this possibility.

ment, and training aids. The clinical portion of the program must be based at the hospital. Field experience in the vehicle should be based wherever actual field problems can be encountered, and where students, instructors, and bystanders can be protected from misadventure or environmental hazard.

The facility should be well lit to assure adequate viewing of visual aids and demonstrations. Heating and ventilation of the facility should assure student and instructor comfort.

The lecture area should contain a lectern for lesson plans, notes, and references. A large table should be provided for displaying equipment, medical supplies, and training aids, and for demonstrating emergency medical procedures. A chalkboard, projection screen, and stand for charts should be located in the lecture area. If possible, light switches should be convenient to the area.

The student area should contain tables or chairs with writing surfaces for taking notes. Chairs should be arranged for unobstructed visual access to the instructor, demonstration area, screen, etc., and to provide convenient physical access to the practice area. Sufficient space should be provided for accommodating slide and movie projectors.

Each practice area should be large enough to accommodate 10 students working individually or in groups of varying sizes, as well as the equipment and medical supplies used in practicing procedures. Tables should be provided for equipment and supplies and for use during certain procedures.

*Clinical Training*

To present the program, it will be necessary to have access to the clinical units listed below. If a unit is not available, adjustments should be made to insure that the activities proposed for that unit are included in the modules. The student's training should be supervised in each of the following clinical areas:

- Emergency department
- Intensive care unit/coronary care unit
- Operating/recovery room
- Intravenous (IV) team
- Pediatric unit
- Labor suite/delivery room/newborn nursery
- Psychiatric unit
- Morgue
- Intensive care vehicle—ambulance

Sample forms for maintaining student activity records are included in the *Instructor Lesson Plans*. The forms are designed so that the medical director

can determine the number of times, and how successfully, a student has performed a skill. The medical director also will be able to determine how much time the student needed to become proficient in the skill. Further, the medical director will be able to evaluate student performance under a number of preceptors, because certain skills are repeated in various clinical units (e.g., initiating an IV is performed by the student with the IV team and in the emergency department and intensive care unit).

Although the clinical experience is listed with the module, it need not be presented each time, even if a number of modules are being presented.

*Special Facilities*

In Module V, Unit 4, and Module VI, Unit 6, the student activities include the practice of skills and the observation of techniques in the animal laboratory. If an animal laboratory is available, the sessions outlined would be most beneficial. If the facilities are not available, however, the time may be used for equivalent activities, for example, movies, dissection of beef hearts, or practice sessions.

**Cost**

Because of the variation in the length of training programs, reimbursement rates for instructors, and costs in the purchase of unavailable training aids, an average cost per program or per student is not available. The cost will vary between sponsoring institutions. When calculating the cost for the program, however, the following should be considered:

- Instructional costs
- Administrative costs
- Training aids needed but not already available through the sponsoring institution or local resources
- Printing and reproduction
- Expendable supplies and materials
- Depreciation of equipment
- Maintenance

**Materials and Equipment**

The materials and equipment required for this course are listed in Appendix F. The course coordinator is advised that the equipment specified is minimal and designed to provide a standardized base of equipment for the

course. Where additional material or equipment is available in the area, the course coordinator is encouraged to make such supplementary material accessible.

### References

The student text is the primary reference and also provides lists of resources for those individuals responsible for course administration and instruction. Instructors and course coordinators are encouraged to continue their review of recently published texts as well as the many periodicals related to the field of emergency medical services.

## COURSE IMPLEMENTATION CONSIDERATIONS

### How to Use the *Instructor Lesson Plans*

The *Instructor Lesson Plans* are guides for teaching an advanced-level training program for emergency medical technicians. The *Plans* cannot be used by the instructor to develop the competency to conduct the program; the instructor should have this as a prerequisite to teaching the course.

The *Instructor Lesson Plans* are comprised of 15 modules, each containing the information and instructions needed to conduct a program on a particular subject. Each module can be used by itself or in concert with other modules.

Each module is subdivided into instructional units that deal with a particular segment of the module subject. All of the units contain the following components:

- *Performance Objectives.* These are classified as knowledge (K) objectives or skill (S) objectives. They are written in behavioral terms so they can be evaluated either through observation of student activities or through results obtained under specified conditions.
- *Unit Activities.* Reading assignments, reference materials, and outside activities are presented for both the students and the instructor. If the activities are identical, only the instructor's activities are presented.
- *Equipment and Materials.* Educational equipment includes chalkboard, overhead projector, slide projector, and screen. Medical equipment and materials required are drawn from those listed in Appendix F of the *Course Guide.*
- *Content Outline.* This presents the topics to be covered during the presentation of the unit. Where appropriate, it is divided into single skills or concepts. This approach gives the instructor the flexibility to add or

delete specific skills and information. The content outline also provides directions to the instructor indicating when the use of demonstrations or group discussions would be most appropriate.

Because the units are designed to be taught by technically competent instructors, the content outlines are not specific; they only enumerate topics and subtopics. It is expected that the instructor's skill and knowledge will supplement the depth of the course content outline. The instructor is encouraged to prepare additional notes.

- *Demonstration Outlines.* These are designed to present procedural steps that are important in performing the particular skill or calculation. Steps that are critical or that may lead to common errors are emphasized. Where critical steps exist, these outlines suggest what should be demonstrated.
- *Practice Sessions.* These sessions serve as guides to activities to be performed by students applying the skills. They may be performed in the classroom or assigned as homework. During classroom practice sessions, the instructor will be available to observe and correct student performance and to answer any questions.
- *Skill Evaluations.* The skill evaluation sheets provide checkpoints for the instructor to use to insure that students are following appropriate procedures or sequences. Skill evaluation sheets also provide a convenient method for feedback to students having particular problems with a given skill, and for monitoring a student's progress in attaining skill objectives.

The skill evaluation should occur only after the students have had an opportunity to practice the skill under the supervision of the instructor. The evaluation sheets can be distributed during or before the demonstration or the practice session. Thus, they can be used as a job aid during practice. They should not be used as a job aid while the student is being evaluated. The sheets are designed to provide a learning and evaluation tool, and are not intended to mandate performance in the field in a set manner, irrespective of the patient's condition or situation.

Satisfactory performance of a given skill is defined as correct performance of all critical steps in the proper sequence. The instructor's judgment is required to define correct performance and sequence of steps in a skill. Skill evaluations may be repeated at intervals throughout the course to assess skill decay and the need for remedial practice. Some instructors may wish to test skills immediately after they have been learned and again at the conclusion of the course.

The alphanumeric coding system is used to identify the various modules and units. Take Module II, for example; when you see **3.6.1.K**, the **3** indicates the unit, the **6** indicates the main instructional topic, the **1** indicates the subsection of the major topic outlined in **3.6**, and the **K** indicates the teaching objective (in this case, knowledge).

To illustrate further, **3.6.1.K** would translate into:

**3** = Unit number
**6** = The main topic of the instructional section (the first two numbers—e.g., **3.6**—refer to a major heading in the unit content outline.)
**1** = A subsection of the major topic outlined in **3.6** (this number relates to the number of objectives listed under skill or knowledge objectives and not to the content outline.)
**K** = Knowledge objective
**S** = Skill objective

The three-digit reference numbers (e.g., **3.6.1**) within each module refer to the topical section in that module only. For example, in Module II, any topical heading with **3.6** as the first two digits refers to the discussion of the components of patient assessment in Unit 3.

### Use of the *Text* and *Workbook* for the EMT-Paramedic Course

The *Text* and *Workbook* for the EMT-Paramedic course are designed to provide the student with study materials that can be used while taking the course, as well as a later reference to the subject matter included in the course. Both volumes are organized by chapter, matching the *Instructor Lesson Plans*.

#### *Text*

*Narrative:* The narrative is an expansion of the course content outline and provides further explanation and detail for the student. Included in the narrative are appropriate illustrations and examples.

*Glossary:* A glossary of all vocabulary words used in the text is included. A guide to drugs used in the field and common drugs used by patients at home also is included.

#### *Workbook*

*Student Workbook:* Sample problems, activities, and self-testing materials are included by chapter to help the student assess his understanding of the subject matter covered.

## Testing and Evaluating the Student

It is recommended that each student be evaluated on his proficiency of skills and his knowledge at the completion of each module. Skill evaluation sheets have been provided for each skill in each unit. These sheets can be used as guides for evaluating the student's skill proficiency. The evaluation of the knowledge objectives is left to the discretion of the instructor, according to predetermined objectives. Testing of knowledge should stress areas of clinical relevance over basic science. No matter what type of evaluation system is established, students should be kept informed of their progress and should be given additional activities to supplement weak areas.

As previously stated, the emphasis is on student competency, rather than on the total number of hours the student is involved in the program. Thus, it is possible for the student to be tested and given credit for any module. The medical director should not assume the student's competency simply because of prior training, but should develop an evaluation method to determine the student's proficiency based on first-hand observation and experience. With this type of method, it is possible for students to receive credit for prior training experience. This would be especially applicable for those modules that are primarily a review of skills concerned with Emergency Medical Technician-Ambulance; for example, soft-tissue injuries and rescue.

## Certification

Upon successful completion of the training program, the student should receive some type of certification. In most States, a written examination and the demonstration of skills are necessary for State certification or licensure as an EMT-Paramedic, or some intermediate-level EMT. Each sponsor must investigate the availability of such a certification process and the criteria for qualifying for the certification.

Successful completion of the program in its entirety, or any segment thereof, should not be based on a total number of classroom or clinical hours logged by the student. Although recommended times have been listed in Appendix D, this information is to be used for course planning purposes and not for measuring student achievement.

As described previously, the course in its entirety reflects the criteria established for the EMT-Paramedic by the Task Force on Emergency Medical Technicians, National Academy of Sciences/National Research Council. In each of the modules of the *Instructor Lesson Plans*, specific skill and knowledge objectives have been included. If the student can complete the skill and

knowledge objectives for each module, then he will have met the criteria established by the Task Force. This does not require the student to participate in classroom activities for each of the modules, but requires only that the student demonstrate to the certifying agency, or its designate, proficiency with respect to the stated objectives. Therefore, a student may demonstrate proficiency and receive credit for completing a specific module without participating in the formal classroom activities. In those instances where the sponsor chooses not to present the program in its entirety or to evaluate the student on all modules, the student will not meet the criteria established by the Task Force on Emergency Medical Technicians, and the student cannot be certified an EMT-Paramedic.

**Continuing Education**

Because of the vast variety of medical emergencies, the EMT-Paramedic is required to continue his education because:

- He often does not receive adequate practice experience in the field to maintain high proficiency in skills learned during the program.
- There may be new techniques or procedures with which the sponsoring institution would like to acquaint the EMT's.
- A constant review of case studies and procedures will increase the effectiveness and efficiency of the EMT's in the field.

The amount of continuing education desirable for each EMT will vary among given locations, depending on such factors as the number of calls, the types of cases seen, and the amount of communication with the sponsoring institution. Each continuing education program must be molded to meet the needs of the personnel, but the following continuing education mechanisms are suggested:

- Periodic clinical experience in the hospital units under direct supervision to maintain skills.
- Periodic case review of calls by the ambulance personnel and hospital personnel at a group meeting.
- Periodic seminars sponsored by the in-service education department of the sponsoring institution or medical director
- Periodic seminars sponsored by recognized organizations, for example, American College of Emergency Physicians and the Emergency Department Nurses Association.

**Student Records and Identification**

Transcripts of high school and college credits and other credentials must be on file and accessible.

Upon admission, a medical examination should be given and a record of disabling health conditions should be maintained. A medical examination should occur on entry to and exit from the program. A record of this examination and a chest X-ray should be kept.

A record of class and laboratory participation and evidence of competencies attained by each student should be maintained in accordance with the requirements of the institution.

Copies of practical and written examinations and evaluations should be maintained for periodic assessment. Students must be clearly identified to distinguish them from graduate emergency medical service personnel, other health professionals, and other students.

**Finances**

Financial resources for the continued operation of the educational program should be assured for each class of students enrolled. A record of funding sources will be maintained—that is, Federal, State, local, etc.

The institution shall not charge excessive student fees. A detailed record of training cost per student will be maintained and kept up-to-date.

Advertising must be appropriate to an educational institution.

The program shall not substitute students for paid personnel to conduct the work or teaching of the clinical facility or intensive care services in the field (ambulances).

There should be evidence of an auditing and an accounting of financial resources required, generated and expanded by the program.

**Advisory Committee**

An advisory committee should be appointed to provide counsel and advice regarding the objectives and operation of the training program, its continuing development, and the value of its graduates within the EMS system. For maximum effectiveness an advisory committee should include representation from the institutions and agencies involved and affected by the program, such as hospitals; police and fire protection agencies; consumers; local or regional medical, nursing, and paramedic organizations; other physicians, nurses, and State or national paramedics; the regional health planning agency; local

government representatives; attorneys; private ambulance services; and, in an ex officio capacity, the medical/program directors and coordinators.

**Reports**

Annual reports of the operation of the program should be prepared and available for review. The program shall provide evidence of an established schedule for self-analysis in the maintenance and improvement of the educational and training effort, and periodic reports of these should be on file.

## PROGRAM ADMINISTRATION

This section briefly outlines the steps necessary to initiate, organize, and administer an advanced training program for emergency medical technicians. These steps will help insure that:

- All interested organizations are involved in the planning and implementation of the program.
- Involvement and support of the medical community and hospital administration are obtained.
- The course presentation is appropriate for local needs and resources, but meets minimum established standards.
- A medical director is identified and accepts responsibility for the EMT's in the field.
- Qualified instructors are identified and scheduled for the class.
- The required facilities and equipment are available.
- The training program is cost effective.

The format of this section illustrates a task description and can be seen on the following pages. The left-hand column is the required activity; the right-hand column gives further explanation of the required activity.

| Required activity | Explanation |
|---|---|
| | Assumes that a medical institution is interested in the presentation of an advanced program for EMT-Ambulance. |
| 1. The local group should select a review or advisory committee. This committee will be responsible for the evaluation of the feasibility of presenting the training program and for developing the emergency medical care system. | The committee should represent groups involved in presenting the training program and implementing the system, including representatives of:<br>• Hospital administration<br>• Medical staff<br>• Nursing staff<br>• Local ambulance provider(s)<br>• Consumer<br>• Local government |
| 2. The committee should determine the presence of resources in the area that could assist in the evaluation of the need for training; for example, local emergency medical services (EMS) councils, State bureau of EMS, regional administrator for the National Highway Traffic Safety Administration. (If resources are available, a representative should be asked to serve on the committee, or at a minimum, to act in an advisory capacity.) | In most States, there are State-level resources with specific responsibility for emergency medical services. If this resource is not available, there may be access to local expertise through local EMS councils or the medical community. Because of the nature of this program, it would be advantageous to have someone familiar with the program to assist in the planning and implementation. |
| 3. Once the committee has been formed, the first responsibility is to determine the feasibility of the training program. Because | |

| Required activity | Explanation |
|---|---|
| of the nature of the training and the ultimate activities of the personnel trained, the following criteria should be examined before implementation of the program is considered: | |
| a. A qualified physician must be available 24 hours a day, 7 days a week to communicate with Emergency Medical Technician (EMT)-Paramedics in the field. | A physician is not necessarily required in-house 24 hours per day, but he must be available for consultation by telephone or radio at all times. |
| b. The hospital administration and the medical and nursing staffs should endorse the program. | At this point, it is necessary to have a general impression of the feelings of the medical and nursing staffs and the hospital administration. |
| c. The medical and nursing staffs recruited for teaching the program must be willing to accept responsibility for training the paramedics. | |
| d. Once trained, the EMT must be equipped to function in the field. This requires that hospital/vehicle communications be in existence and that the vehicles be equipped with advanced life-support equipment and with all materials and supplies to be used by the EMT (e.g., cardioscope/defibrillator, intravenous (IV) supplies, and drugs). | |

| Required activity | Explanation |
|---|---|
| e. A physician or physicians must agree to provide medical supervision for the EMT's after completion of the program.<br><br>(If the program does not appear feasible, determine specifically why the program is not feasible and take steps to modify the system.) | |
| 4. Once the committee has determined the feasibility of the training program for the community and anticipates presenting the training programs, all interested parties should be invited to participate in the planning. | By including all interested parties in the planning phase, many problems arising later may be averted.<br><br>The committee will be referred to as the advisory committee.<br><br>This group also will be responsible for continued review of personnel and procedures. |
| 5. A member of the committee should be selected to investigate the legal aspects of the EMT training, and to investigate insurance requirements for the students, for the hospital, and for the personnel who will be responsible for supervising EMT's during training and in the field. | Local considerations vary greatly according to State laws. Each hospital must investigate the laws pertaining to the EMT in its locale. It must also investigate the insurance requirements for such individuals. In many instances, the EMT can be adequately covered if the hospital considers him an employee of the institution. Then the EMT is included under insurance coverage as any other hospital employee. Each institution, however, should investigate this matter to determine what is most beneficial. |

| Required activity | Explanation |
|---|---|
| 6. The committee should choose a medical director who will be ultimately responsible for the EMT's.<br><br>When selecting the medical director, the following criteria should be considered:<br><br>a. A definite interest in the improvement of emergency medical services and knowledge of the problems involved<br><br>b. Extensive critical or emergency care experience (e.g., that of full-time emergency department physician)<br><br>c. History of interest in the local ambulance service. The candidate for medical director should have had actual experience on the vehicle with the ambulance crew. | The medical director must be willing to maintain an active role in the selection, training, and supervision of the EMT's. |
| 7. The committee should select an individual to act as the course coordinator. This individual will be responsible for the (1) scheduling of classes and clinical experiences and (2) liaison between the students and the institution. | In some instances, the course coordinator is a nurse from the In-Service Education Department of the sponsoring institution. |

| Required activity | Explanation |
|---|---|
| 8. Once the medical director and course coordinator have been identified, the tentative course content should be outlined. The course should be defined based on the skills, selected by the committee, that are to be performed by the EMT in the field. | The *Instructor Lesson Plans* are organized to permit deletion or inclusion of any module. The only requirement in presenting a module is that the recommended prerequisites that accompany that module have been presented. Dividing the program into modules provides the flexibility for local options. An individual can be trained to any intermediate level as dictated by State needs and constraints.<br><br>The *Instructor Lesson Plans*, if presented in their entirety, will train the individual to the EMT-Paramedic level as outlined by the National Academy of Sciences/ National Research Council (NAS/ NRC) Task Force. If it is not feasible to present the entire program because of local needs or limitations, the committee may select segments of the program. This will not qualify the personnel as EMT-Paramedics, but it will allow the local institution to present a training program that meets local needs.<br><br>Suggested scheduling alternatives are outlined in Appendix E. |
| 9. The committee should determine the number of students to be trained in the program. | Because of the nature of the training program and the need for clinical experience, the number of students per class is usually limited. For planning purposes, the didactic segment will usually have no more than 20 students per instructor (20:1), with |

| Required activity | Explanation |
|---|---|
| | the instructor-to-student ratio being reduced to 10:1 for the practical sessions. During the clinical experience, the instructor-to-student ratio is usually no more than 2:1, with the ideal ratio being 1:1. |
| 10. Based on the number of students, the committee should determine the type of facility required for the didactic and practical sessions. | |
| 11. Once the course content is outlined using the lesson plans, the potential length of the training program and requirements for instructors and equipment can be determined. | |
| 12. Based on the previous information, the committee should then be able to calculate a cost for the total program and per student. | When calculating the cost for the program, the following should be included:<br>• Instructional costs<br>• Expendable supplies and materials<br>• Training aids needed not already available to the hospital<br>• Administrative costs<br>• Printing and reproduction<br>• Depreciation of equipment<br>Because of the variation in length of programs, reimbursement rates for instruction, and costs in the purchase of unavailable training aids, an average cost per program or per student is not given. The cost will vary among sponsoring institutions. |

| Required activity | Explanation |
|---|---|
| 13. The committee should determine the source of the necessary funds to cover the cost of course presentation. | Possible sources for the funding of EMT training would include the following:<br>• Tuition fee to the student<br>• Tuition fee per student charged to each ambulance service<br>• Local hospital<br>• Local institution or foundation<br>• Local government (Because of the public service provided through prehospital advanced life support, local governments may fund such a project.)<br>• State government (Many States have allocated funds for the development of emergency medical services systems.)<br>• Federal Government (Funds may be available through a number of Federal agencies.) |
| 14. Once the outline of the program has been developed by the committee, the program should be presented to the representatives of the medical staff and nursing staff and to the administration of the sponsoring hospital for final endorsement. | It is desirable to receive this endorsement from representatives of the medical and nursing staffs because the training will be given by the nurses, physicians, and allied health professionals. Ultimately, a single physician or team of physicians will be responsible for the EMT's in the field. All physicians will care for patients who may be treated by EMT's. |
| 15. Any modifications or suggestions made by the groups listed in No. 14 should be incorporated and the course outline finalized. | |

| Required activity | Explanation |
|---|---|
| 16. Potential instructors for the training program should be identified. The primary source for the instructors will probably be the local health care facilities and the local ambulance services. When identifying potential instructors, the following criteria should be considered:<br><br>a. Extensive critical or emergency care experience<br><br>b. Instructional experience<br><br>c. A level of medical knowledge above that required of the EMT<br><br>d. Either a physician, registered nurse, American registered inhalation therapist, certified EMT, or other specialized professional<br><br>e. Experience on a vehicle with an ambulance crew | The identification of potential instructors should be based on the needs of the specific lessons. It is not mandatory that every lesson be presented by a physician; some lessons—for example, drawing blood samples—could be more appropriately presented by an experienced allied health professional. |
| 17. Potential instructors should be contacted according to their interest in teaching a segment of the training program. The instructors should be given a tentative schedule and content outline for their sections to review before they are expected to respond. | The advisory committee should assist in the identification and selection of qualified instructors. Criteria for instructor selection is outlined on pages 10-11. |

| Required activity | Explanation |
|---|---|
| 18. The committee should select the class location and determine the best time period for class sessions. | In determining the time period for class sessions, two things must be considered: first, the availability of instructors, and second, the availability of students. If the training will be presented for primarily full-time students, a schedule including daytime classes may be more feasible. If the students are primarily volunteers, however, the classes will have to be presented in the evenings and on weekends. |
| 19. The committee should schedule all instructors for each lesson selected, including all testing situations. | The schedule may change; however, it is better to begin with the schedule as a guide and make modifications as necessary. |
| 20. The committee should gather equipment and training aids necessary for the program and order the selected references. | |
| 21. Student applications should be circulated to the providers of ambulance services in the area who will be involved in the provision of advanced life support. | The advisory committee member representing the ambulance providers should be able to supply a list of those providers in the area. If not, the local health-planning agency may have that information. |
| 22. The committee should select students for the program employing whatever selection policy will result in the best balance of training among the ambulance providers and will screen the best students for the program. | When reviewing students, the following criteria should be considered. The student should:<br>• Be a high school graduate or have a graduate equivalency degree<br>• Hold valid certification as an |

| Required activity | Explanation |
|---|---|
| | EMT-Ambulance (State certification or National Registry acceptable)<br>• Have been an active member of an emergency/rescue squad for a minimum of 1 year<br>• Have acceptable recommendations from his present ambulance administrator and medical advisor<br>• Be associated with an ambulance service that is equipped for advanced life support (e.g., cardioscope/defibrillator, IV supplies, and drugs)<br>• Have demonstrated the ability to function in an emergency situation (e.g., ambulance attendant, fireman, armed service medic, intensive care unit or emergency department technician). Also see Student Prerequisites on page 8.<br><br>Any selection process should include some type of interview by the advisory committee. |
| 23. The committee should meet with the supervisors of each specialty unit within the hospital to discuss the role of the preceptors and the activities of the students while on the unit.<br><br>The unit supervisors also should receive the activity sheets for each of the students. | At the meeting, the supervisors should be presented a general set of guidelines for the preceptors, but the unit supervisors should have the opportunity to comment and make recommendations.<br><br>The specific units selected for participation in the training may vary among institutions. The EMT |

| Required activity | Explanation |
|---|---|
| These activity sheets will be used to document the performance and activities of the student while on the unit. | should have the opportunity, however, to gain clinical experience in each of the following areas, as appropriate:<br>• Emergency room<br>• Intensive care unit<br>• Operating/recovery room<br>• Psychiatric unit<br>• Labor suite/delivery room<br>• Pediatric unit<br>• IV team<br>• Morgue<br>• Intensive care vehicle—ambulance |
| 24. The class presentation should begin. | During the course, the advisory committee and the course coordinator should monitor the instruction to determine whether the students are receiving the instruction as designed. |
| 25. Once the classes have begun, the clinical experience can be scheduled. | When scheduling the clinical experience, the number of students to be on a given unit at one time is usually no more than two. Normally, only *one* student at a time is scheduled to an IV team. In the morgue experience, a group of three or four students can be accommodated. |
| 26. After the completion of each module or group of instructional units, the students should be tested. | Skill evaluation sheets are provided for each of the units, but written examinations are left to the discretion of the instructor. |
| 27. Upon completion of the program, a final examination should be given. | In most States, a State examination is now available for State certification as an EMT-Paramedic or at some intermediate level. It will be neces- |

| Required activity | Explanation |
|---|---|
| | sary for each local institution to investigate the availability of such a certification process. |
| 28. It will also be necessary to establish a continuing education program based on the needs of the EMT's. | In many instances, the EMT's will use their skills in the field enough to maintain proficiency. In these instances, the continuing education would only include case studies and seminars.<br><br>In other instances, however, volunteer or part-time EMT's may not use their skills in the field enough to maintain proficiency. In these cases, it will be necessary for the continuing education to include a designated time per month or year that the EMT must spend practicing his skills.<br><br>The actual content of a continuing education program should be developed based on the field experiences of the EMT's and local resources. |
| 29. The program should be evaluated according to the needs of the area and effectiveness. If the program is not effective, the necessary modifications should be made. | |
| 30. The committee should determine the need for another training program. (If there is no need for another program, then the task has ended. If there is a need for another program, then go back to No. 13 and repeat the task.) | |

# APPENDIXES

## APPENDIX A

## STANDARDS FOR EMERGENCY MEDICAL TECHNICIAN-PARAMEDIC PERFORMANCE

In any system developed, the Emergency Medical Technician (EMT) should be able to demonstrate the following skills to the satisfaction of the commanding physician or the certifying agency to meet the criteria established for an EMT-Paramedic by the National Academy of Sciences/National Research Council Task Force on Emergency Medical Technicians:

Perform an appropriate patient assessment, including:

- History taking (chief complaint, pertinent history of the present illness and past medical history)
- Physical examination, including:
  - — Assessment of patient's general appearance and state of consciousness
  - — Evaluation of vital signs, including pulse, blood pressure, and respirations
  - — Trauma-oriented and medically oriented head-to-toe surveys, including, but not limited to:
    a. Inspection and palpation of the head and neck
    b. Inspection of the chest and auscultation of heart and lung sounds
    c. Inspection of the abdomen and auscultation of abdominal sounds
    d. Inspection and palpation of extremities
    e. Evaluation of neurological status and neuromuscular function

Demonstrate aseptic technique of peripheral venipuncture and drawing blood samples.

Demonstrate the technique for aseptic assembly of intravenous (IV) equipment and for calculation of flow rate.

Demonstrate on a fellow student, patient, or manikin the technique for establishing an IV lifeline using an over-the-catheter needle (extracath) or winged infusion needle (butterfly).

Recall the type of intravenous fluid appropriate in:

- A "keep open" line in a cardiac patient
- Hemorrhagic shock

Demonstrate on a fellow student or adult manikin the application, inflation, and correct sequence of deflation of the Military Anti-Shock Trousers.

Demonstrate the technique for calculating dosage and drawing up a designated volume of fluid in a syringe from an ampule or vial.

Demonstrate the technique for administering drugs using a prepackaged disposable syringe.

Demonstrate the technique for subcutaneous and intramuscular injection on a fellow student.

List the indications, contraindications, actions, dosage, and route of administration of each of the following drugs:

- Epinephrine 1:10,000
- Epinephrine 1:1,000
- Sodium bicarbonate
- Atropine
- Calcium chloride (or gluconate)
- Lidocaine
- Morphine or other narcotic derivative
- Vasopressor (norepinephrine, dopamine, metaraminol, etc., depending on local use)
- Furosemide (Lasix) or other rapid-acting intravenous diuretic
- Naloxone (Narcan)
- Diazepam (Valium) or short-acting barbiturate
- Oxytocin (Pitocin)
- Aminophylline
- Nebulized bronchodilators
- 50-percent dextrose
- Steroids
- Syrup of ipecac
- Activated charcoal

Demonstrate the procedure for evaluation of a patient with suspected respiratory distress, including the evaluation of general appearance, respiratory rate and depth, pulse, blood pressure, use of accessory muscles of respiration, and quality of breath sounds.

Recall the probable cause, signs, and symptoms and demonstrate the treatment for the following problems involving the respiratory system:

- Respiratory depression
- Respiratory distress (general)
- Upper airway obstruction (tongue, foreign body, blood, vomitus, edema, laryngospasm, airway trauma)
- Obstructive airways diseases
- Toxic inhalations and airway burns
- Pulmonary edema
- Hyperventilation syndrome
- Trauma, including rib fractures, flail chest, simple pneumothorax, tension pneumothorax, hemothorax, and sucking chest wounds
- Pulmonary embolism

Demonstrate in the correct sequence the procedure for opening an obstructed airway, showing mastery of the following skills:

- Backward tilt of the head
- Triple airway maneuver
- Crossed-finger maneuver
- Manual sweeping of the mouth
- Back blows
- Abdominal thrust ("Heimlich maneuver")
- Mouth-to-mouth ventilation

Demonstrate the procedure for the administration of oxygen to a breathing patient using the oxygen mask, nasal cannula, and demand-valve/hand-triggered ventilation device.

Demonstrate the use of the oropharyngeal and nasopharyngeal airways, pocket mask, bag-valve-mask unit, and demand-valve/hand-triggered ventilation device on a nonbreathing patient (manikin).

Demonstrate the technique of atraumatic oropharyngeal and nasopharyngeal suctioning.

Demonstrate the technique of aseptic and atraumatic endotracheal and tracheotomy suctioning.

Demonstrate the technique for direct laryngoscopy and insertion of an endotracheal tube in an adult, child, and infant.

Recall the probable cause(s), signs, and symptoms and demonstrate the treatment for each of the following conditions:

- Acute myocardial infarction
- Congestive heart failure
- Cardiogenic shock
- Syncope
- Myocardial trauma
- Acute hypertensive emergencies

Demonstrate the application of electrodes and the monitoring of a patient's electrocardiographic activity.

Identify on lead II and list the treatment, if any, of the following cardiac rhythms:

- Normal sinus rhythm
- Sinus arrhythmia
- Sinus arrest
- Sinus bradycardia
- Sinus tachycardia
- Premature supraventricular contractions
  - — Premature atrial contractions
  - — Premature junctional contractions
- Supraventricular tachycardia
- Atrial fibrillation
- Atrial flutter
- 1° heart block
- 2° heart block
- 3° heart block
- Premature ventricular contractions (PVC's) (with emphasis on frequent PVC's, R on T phenomena, coupled PVC's, multifocal PVC's)
- Ventricular tachycardia
- Ventricular fibrillation
- Asystole
- Pacemaker rhythms

Perform (with the assistance of a fellow EMT) one- and two-person cardiopulmonary resuscitation (CPR) on adults, CPR on infants, and other basic and advanced life-support techniques as outlined in the standards of the American Heart Association. Skills involved include:

- Recognition of respiratory or cardiac arrest
- Establishment of an airway by manual techniques
- Mouth-to-mouth ventilation
- External cardiac compression
- Use of quick-look defibrillator paddles for recognition of arrhythmias
- Empirical and monitored external defibrillation

The EMT must in addition be able to recall the sequence of actions in gaining control of the airway, gaining access to the venous circulation, and administering drugs under a physician's direction.

Recall the probable cause, signs, and symptoms of and demonstrate the treatment for the following problems involving the central nervous system:

- Trauma to the head or spine
- Seizures
- Cerebrovascular accident
- Coma of any cause

Demonstrate the technique for spinal immobilization using:

- Cervical collar
- Short spine board
- Long spine board
- Orthopedic stretcher

Demonstrate the techniques for controlling hemorrhage, including:

- Direct pressure
- Elevation
- Pressure point control
- Tourniquet

Demonstrate the procedures for managing:

- Avulsions
- Impaled objects
- Eviscerations
- Amputations

Recall the probable signs and symptoms of and demonstrate the treatment for various types and degrees of burns.

Recall the probable cause(s), signs, and symptoms of and demonstrate the treatment for problems involving the musculoskeletal system, including the techniques of immobilization with the traction splint, air splint, and board splint.

Recall the probable cause(s), signs, and symptoms of and demonstrate the knowledge and skills required for management, under a physician's command, of various medical emergencies, including:

- Diabetic ketoacidosis
- Hypoglycemic reactions
- Anaphylactic reactions
- Heat stroke
- Heat exhaustion
- Heat cramps
- Frostbite
- Generalized hypothermia
- Poisonings
- Drug overdose
- Acute abdomen

Demonstrate on an obstetrical manikin the procedure for the preparation of a mother and delivery of an infant in a cephalic birth.

Recall the signs and symptoms and demonstrate the procedure to be performed in each of the following situations:

- Breech birth
- Premature birth
- Abortion (induced by accidental or natural causes)
- Multiple-infant birth
- Arm or leg presentation
- Prolonged delivery
- Prolapsed umbilical cord
- Postpartum hemorrhage
- Ruptured uterus
- Birth of a nonbreathing infant
- Third-trimester bleeding
- Preeclampsia or eclampsia
- Rape
- Supine hypotensive syndrome

Recall the probable cause(s), signs, and symptoms of and demonstrate the treatment for the following problems in a pediatric patient:

- Asthma
- Bronchiolitis
- Croup
- Epiglottitis
- Sudden infant death syndrome
- Seizures
- Child abuse

Demonstrate the appropriate procedure for dealing with emotionally disturbed patients, whether the cause is physical or psychological.

Demonstrate the various aspects of basic extrication/rescue including:

- Vehicle stabilization and hazard control
- Gaining access to the patient
- Disentanglement of the patient
- Packaging the patient
- Extrication of the patient
- Specialized rescue techniques using ropes, knots, hitches, latchings, stretchering, blanketing, and repelling

Demonstrate the completion of required patient records and the transfer of information to the commanding physician, both vocally and in writing, including the operation of a two-way radio and telemetry system.

## APPENDIX B

## COURSE GOALS BY MODULE

### Module I: The Emergency Medical Technician, His Role, Responsibilities, and Training

The role of the Emergency Medical Technician (EMT)-Paramedic in the health care delivery system is discussed. The duties and responsibilities of the EMT as well as any legislation affecting his job performance are covered. In addition, the students discuss issues concerning the EMT, including medical ethics and reaction to death and dying.

Upon completion of this module, the student should be able to:

- List three responsibilities of an EMT-Paramedic.
- Recall the laws under which he is permitted to function.
- Recall two examples of how patients and those caring for them react to death and dying.

### Module II: Human Systems and Patient Assessment

This module includes an overview of anatomy and physiology of each system of the body. The use of medical terminology and the construction of medical terms using roots, prefixes, and suffixes also are included. In addition, the modules deal with the procedure for a patient assessment, including the patient's medical history, physical examination, and transfer of collected information to the supervising physician.

Upon completion of this module, the student should be able to:

- Identify the major structures and the primary function for each of the following systems.

  — Musculoskeletal
  — Respiratory
  — Circulatory
  — Nervous
  — Digestive
  — Endocrine
  — Genitourinary

- Define common medical terms, including prefixes and suffixes in English equivalent, and vice versa.
- Demonstrate the procedure for eliciting a medical history.
- Demonstrate the procedure for conducting a physical examination.
- Demonstrate the procedure for the transfer of information to the supervising physician.

**Module III: Shock and Fluid Therapy**

Included in this module is a discussion of the fluids and electrolytes in the body, with emphasis being placed on the manifestation of fluid and electrolyte imbalances. The manifestations of dehydration and overhydration are included. The module also deals with the causes, signs, and symptoms of shock, fluid administration through intravenous (IV) techniques, and the application of the Military Anti-Shock Trousers (MAST).

Upon completion of this module, the student should be able to:

- Recall the cause, signs, symptoms, and treatment of dehydration and overhydration and their imbalances.
- Recall the definition, causes, clinical manifestations, and treatment of hypovolemic, cardiogenic, or low-resistance shock.
- Recall the appropriate circumstances for use of colloid versus crystalloid solutions.
- Demonstrate on a fellow student, patient, or manikin the techniques of peripheral venipuncture using an over-the-needle catheter device, straight needle, or intracath.*
- Calculate rates of IV fluid administration by drops-per-minute technique.
- Demonstrate aseptic technique of drawing blood.
- Demonstrate on an adult manikin or fellow student the application, inflation, and correct sequence of deflation of the MAST.
- Demonstrate the technique for subclavian and internal jugular intravenous insertion.*

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*Indicates optional skill. The optional skills are included because they have been demonstrated in prehospital care systems as effective in the field when performed by paramedic personnel, but these skills are not necessary to meet the criteria for an EMT-Paramedic as defined by the National Academy of Sciences/National Research Council Task Force on Emergency Medical Technicians.

**Module IV: General Pharmacology**

This module is designed to introduce the student to the general groups of drugs and the classification of each. The module also discusses the kind of information the student should know about each drug; specifically, therapeutic effect, indications, contraindications, correct dosage, and side effects. In addition, the module deals with the calculation of dosages, the use of the metric system, and the administration of drugs through the various routes.

Upon completion of this module, the student should be able to:

- Define the action of an agent given the general group to which it belongs, for example, alpha sympathomimetic agent.
- List the information the EMT should know about each drug.
- State the procedure for verifying medication orders received over the radio from a physician.
- Calculate the volume of fluid to be administered given the dosage required and the concentration of the drug.
- Define the Latin prefixes and units of measurement used in the metric system.
- Convert one unit of measure to another in the metric system, for example, centimeters to meters.
- Calculate the weight in kilograms when given a weight in pounds.
- Demonstrate the technique for drawing up the designated volume of fluid in a syringe from an ampule and a vial.
- Demonstrate the technique for administering drugs using a prepackaged disposable syringe.
- Demonstrate the technique for subcutaneous and intramuscular injection on a fellow student.
- Demonstrate the techniques for the administration of drugs into an IV bottle or through an IV insertion site.

**Module V: Respiratory System**

This module begins with a discussion of the anatomy and physiology of the respiratory system and the assessment of a patient with suspected respiratory distress. Pathophysiology—including respiratory arrest, upper airway obstruction, obstructive airway diseases, toxic inhalations, pulmonary edema, hyperventilation syndrome, pulmonary embolism, and trauma—also is discussed. Techniques of management include oxygen administration, use of adjunctive

equipment, direct laryngoscopy, endotracheal intubation, esophageal obturator airway, and suctioning, among others.

Upon completion of this module, the student should be able to:

- Identify each structure in the respiratory system, and list at least one function of each.
- Demonstrate the procedure for the evaluation of a patient with suspected respiratory distress, including the evaluation of hypoxia, pulse, blood pressure, and neck vein distension, inspection of the precordium, and auscultation of lung sounds.
- Recall the probable cause, signs, symptoms, and treatment of the following problems involving the respiratory system:

  — Respiratory depression and respiratory distress
  — Upper airway obstruction
  — Obstructive airway diseases
  — Toxic inhalations
  — Pulmonary edema
  — Hyperventilation syndrome
  — Trauma, including rib fractures, flail chest, traumatic pneumothorax, and hemothorax
  — Pulmonary embolism

- Demonstrate the procedure for the administration of oxygen to a breathing patient using oxygen mask, nasal cannula, and demand-valve unit.
- Demonstrate the use of oropharyngeal and nasopharyngeal airways, pocket mask, bag-valve-mask unit, and demand-valve unit on a non-breathing patient (manikin).
- Demonstrate proper assembly, cleaning, functioning, and testing of all above equipment.
- Demonstrate the technique of aseptic and atraumatic orotracheal, endotracheal, and tracheotomy suctioning.
- Demonstrate the use of hand-powered or gas-powered nebulizer.
- Demonstrate the technique for direct laryngoscopy.
- Demonstrate the procedure for the insertion of an endotracheal tube in an adult and an infant manikin.
- Demonstrate the technique for the insertion of an esophageal obturator airway.
- Demonstrate the technique of cricothyroidotomy on a manikin or animal.*

*Indicates optional skill.

- Demonstrate the technique of transtracheal jet insufflation on a manikin or animal.*
- Demonstrate the technique for using a positive— end expiratory pressure device.*
- Demonstrate on a manikin or animal the procedure for relieving a tension pneumothorax using a catheter and Heimlich valve.*

**Module VI: Cardiovascular System**

The module begins with a discussion of the anatomy and physiology of the cardiovascular system, with emphasis on the structure, function, and electrical conduction system of the heart. Then the assessment of the patient with a suspected cardiovascular problem is discussed. Pathophysiology also is discussed, including coronary artery disease and angina, acute myocardial infarction, cardiogenic shock, syncope, trauma, and hypertensive states. In addition, the module deals with the interpretation and treatment of basic arrhythmias. Specific techniques covered include cardiopulmonary resuscitation, electrocardiographic monitoring, defibrillation, phlebotomy, carotid sinus massage, intracardiac injections, transthoracic pacemakers, and use of mechanical heart-lung resuscitators.

Upon completion of the module, the student should be able to:

- Label each structure on the diagram of the cardiovascular system, and list one function of each.
- Label each structure on a diagram of the heart, and list one function of each.
- Label each structure on a diagram of the electrical conduction system of the heart.
- List the cause, signs, symptoms, and treatment of each of the following conditions:

  — Acute myocardial infarction
  — Congestive heart failure
  — Cardiogenic shock
  — Syncope
  — Myocardial trauma
  — Hypertensive states

- Demonstrate the application of electrodes and the monitoring of a patient's electrocardiogram (EKG) activity.

*Indicates optional skill.

- Identify on an EKG the P wave, P-R interval, QRS complex, T wave, and isoelectric lite.
- Identify on lead II and list the treatment, if any, for the following cardiac rhythms:

  — Normal sinus rhythm
  — Sinus arrhythmia
  — Sinus arrest
  — Sinus bradycardia
  — Sinus tachycardia
  — Premature supraventricular contractions
    a. Premature atrial contractions
    b. Premature nodal contractions
  — Supraventricular tachycardia
  — Atrial fibrillation
  — Atrial flutter
  — 1° block
  — 2° block (Mobitz I and II)
  — 3° block
  — Premature ventricular contractions
  — Ventricular tachycardia
  — Ventricular fibrillation
  — Asystole
  — Pacemaker rhythm

- Demonstrate on an adult manikin and an infant manikin the technique for one-person and two-person cardiopulmonary resuscitation, including advanced life-support techniques (defibrillation after quick look, IV insertion, intubation, sequence of pharmacologic agents).
- Demonstrate the procedure for the application of rotating tourniquets, using conventional as well as pressure-monitored pneumatic cuffs.
- Demonstrate the technique for cardioversion on a manikin.*
- Demonstrate the technique of carotid sinus massage.*
- Demonstrate the technique of phlebotomy on a manikin.*
- Demonstrate on a manikin or animal the technique of intracardiac injection.*
- Demonstrate on a manikin the procedure for using a transthoracic pacemaker.*
- Demonstrate the procedure for the use of mechanical heart-lung resuscitation on a manikin.*

*Indicates optional skill.

**Module VII: Central Nervous System**

This module includes the anatomy and physiology of the central nervous system (CNS) and the procedure for the assessment of a patient with a nervous system disorder. The pathophysiology and management of patients presenting with CNS trauma, seizures, and cerebrovascular accident are discussed. In addition, management of the comatose patient is covered. Specific treatments discussed include spinal immobilization in cases of trauma and the administration of diazepam in cases of seizures.

Upon completion of this module, the student should be able to:

- Label each structure on a diagram of the brain and spinal column, and list the function of each.
- Demonstrate the technique for evaluating a patient with a suspected CNS disorder, including:
  - — Trauma
  - — Seizures
  - — Cerebrovascular accident
  - — Coma
- Demonstrate the technique for spinal immobilization using:
  - — Short spine board
  - — Long spine board
  - — Orthopedic stretcher
- Recall the procedure for the management of the following CNS disorders:
  - — Trauma
  - — Seizures
  - — Cerebrovascular accident
  - — Coma

**Module VIII: Soft-Tissue Injuries**

This module includes the anatomy and physiology of the integument. The assessment and management of soft-tissue injuries, including abrasions, lacerations, punctures, avulsions, burns, and impaled objects, are also included. Skills presented in this module include control of hemorrhage and the dressing and

bandaging of specific injuries. Also discussed are injuries to specific regions, including the eye, face, neck, and abdomen.

Upon completion of this module, the student should be able to:

- Demonstrate the techniques for controlling hemorrhage.
- Demonstrate the procedure for dressing and bandaging an avulsion or an impaled object.
- Demonstrate the procedure for treating specific injuries to the eye, face, and neck.
- Recall the types and degrees of burns, and demonstrate the treatment for each.

**Module IX: Musculoskeletal System**

This module includes the anatomy and physiology of the musculoskeletal system, patient assessment, and the management of sprains, strains, fractures, and dislocations. Skills presented include splinting and immobilization techniques with the traction splint, air splint, and board splint.

Upon completion of this module, the student should be able to:

- Label the major muscle groups and bones of the body.
- Demonstrate the technique of immobilization using the traction splint, air splint, and board splint.
- Demonstrate the technique for managing a dislocation of the elbow, knee, ankle, hip, shoulder, or wrist.

**Module X: Medical Emergencies**

This module includes the identification and management of diabetic emergencies, anaphylactic reactions, exposure to environmental extremes, alcoholism, poisoning, acute abdomen, genitourinary problems, and medical emergencies of the geriatric patient.

Upon completion of this module, the student should be able to:

- Identify the medical problem as one of the following:
  - — Hyperglycemia
  - — Hypoglycemia
  - — Anaphylactic reaction
  - — Heat stroke
  - — Heat exhaustion

— Heat cramps
— Frostbite
— Hypothermia
— Absorbed poison
— Ingested poison
— Inhaled poison
— Injected poison
— Alcoholism
— Acute abdomen
— Genitourinary problems

when given lists of signs and symptoms for a patient.

- Recall the treatment for each of the above medical problems.
- Demonstrate on a fellow student the insertion of a nasogastric tube.*
- Demonstrate the technique of insertion of urinary bladder catheter.*

**Module XI: Obstetric/Gynecologic Emergencies**

This module includes the anatomy and physiology of the female reproductive system and the technique for patient assessment of a person with suspected obstetric or gynecologic disorder. The module also includes the management of an expectant mother, normal delivery, and the care and transportation of a mother and newborn. Abnormal deliveries such as multiple births, premature birth, breech birth, and prolapsed umbilical cord are discussed. In addition, complications of labor and delivery, including postpartum hemorrhage, ruptured uterus, inverted uterus, eclampsia, and infant resuscitation are reviewed.

Upon completion of this module, the student should be able to:

- Label each structure on a diagram of the female reproductive system, and list one function of each.
- Demonstrate on an obstetrical manikin the procedure for the preparation of a mother and the delivery of an infant in a cephalic birth.
- Identify the procedural steps to be performed in each of the following situations:

— Breech birth
— Premature birth
— Abortion (induced by accidental or natural causes)

*Indicates optional skill.

— Multiple-infant birth
— Arm or leg presentation
— Prolonged delivery
— Prolapsed umbilical cord
— Postpartum hemorrhage
— Ruptured uterus
— Birth of nonbreathing infant
— Third trimester bleeding
— Eclampsia or preeclampsia
— Rape
— Supine hypotensive syndrome

**Module XII: Pediatrics and Neonatal Transport**

This module explains the unique aspects of dealing with and assessing pediatric patients. It also includes the pathophysiology and management of problems that are primarily seen in pediatric patients, including asthma, bronchiolitis, croup, epiglottitis, sudden infant death syndrome, and seizures. In addition, the module discusses the role of the EMT in a system for neonatal transport. The specific skills included are a review of infant resuscitation, IV techniques, and tracheal intubation on the infant.

Upon completion of this module, the student should be able to:

- Demonstrate the technique for assessing a pediatric patient and recall at least three activities unique in managing children.
- Identify the problem as one of the following:

  — Asthma
  — Bronchiolitis
  — Croup
  — Epiglottitis
  — Sudden infant death syndrome
  — Seizures
  — Child abuse

  when given a list of signs and symptoms for a patient.

- Recall the probable cause and treatment for each of the above problems.
- Demonstrate the technique for endotracheal intubation on an infant manikin.
- Demonstrate the cardiopulmonary resuscitation on an infant manikin.

- Demonstrate the insertion of an IV on an infant manikin.
- Demonstrate the procedure for the operation of an isolette by maintenance of a temperature- and oxygen-concentration-controlled environment.*

**Module XIII: Management of the Emotionally Disturbed Patient**

This module discusses the various kinds of psychological problems the EMT might encounter. Specific procedures for handling each are included.

Upon completion, the student should be able to:

- Identify a patient's behavior pattern from his activities and the situation.
- Identify situations suggesting the following:

  — Suicide attempt
  — Hostility and violent behavior
  — Acute grief and depression
  — Paranoia
  — Hysterical conversion

- Demonstrate the technique for dealing with the patient in each of the above situations, including:

  — Communication and interview technique
  — Violence containment

- Recall the local resources that may assist the student in the management of an emotionally disturbed patient.
- List the laws governing the handling and commitment of emotionally disturbed patients and list one effect each law has on the activities of the EMT in the field when dealing with emotionally disturbed patients.

**Module XIV: Extrication/Rescue Techniques**

This module emphasizes gaining access to, rescuing, and transporting a patient. The recognition and control of certain hazards, such as explosive materials, downed electrical wires, toxic gases, and radiation are included. In addition, techniques for lifting, packaging, and transporting patients in emergency and nonemergency situations are mentioned. This module should be

*Indicates optional skill.

developed to meet geographical needs on a local basis. While it is important that the EMT-Paramedic be competent in extrication/rescue techniques, it is considered preferable that these techniques be carried out by others.

Upon completion of this module, the student should be able to:

- Demonstrate the procedure for gaining access and disentangling a patient in a vehicle or structure.
- Identify possible hazards when given a description of a scene, and recall the procedure for dealing with the hazard.
- Demonstrate the procedure for the transportation of a patient having at least one of the following:

  — Flail chest
  — Fracture of an extremity
  — Spinal trauma
  — Multiple trauma
  — Myocardial infarction
  — Foreign body impaled in trachea, abdomen, back, or thorax

- Demonstrate with an assistant, using a fellow student as a patient, various techniques for lifting and moving patients in simulated emergency and nonemergency situations.
- Demonstrate the procedure for the following situations:*

  — Elevator rescue
  — Repelling on a steep cliff
  — Deep hole rescue
  — Water rescue

**Module XV: Telemetry and Communications**

This module deals with the use of radio communications equipment, including the transmission of voice communications and EKG transmission. The module also includes a discussion of the regulations established by the Federal Communications Commission (FCC) with respect to the use of radio equipment. In addition, the module deals with the protocols and procedures for the transfer of information to the supervising physician.

Upon completion of this module, the student should be able to:

*Indicates optional skill.

- Demonstrate the procedure for dispatching and using radio communications equipment.
- Demonstrate the procedure for relaying information to the physician in the correct sequence.

**Clinical Training**

The clinical experience required for each module is presented in the *Instructor Lesson Plans* by module. The following is a summary for the entire program.

*Emergency Department:* During his experience in the emergency room, the student should have the opportunity to practice under direct supervision and demonstrate proficiency for each of the following:

- Perform patient assessment including developing relevant medical history and conducting a physical examination. The assessment should include, at a minimum, taking and recording vital signs, and auscultation of chest sounds.
- Assist and review the treatment of trauma cases and medical emergencies.
- Assist in triaging patients.
- Assist in trauma cases requiring hemorrhage control, suturing, and splinting.
- Perform peripheral IV insertions.
- Prepare and administer intramuscular, subcutaneous, and IV medications.
- Record and interpret EKG's.
- Draw blood samples.
- Assist in cases of cardiac arrest, including the performance of cardiopulmonary resuscitation, airway management, intubation, and defibrillation.
- Perform a subclavian or internal jugular IV insertion.*
- Perform a cricothyroidotomy.*
- Perform a transtracheal jet insufflation.*
- Perform a phlebotomy in cases of acute heart failure.*
- Demonstrate the use of transthoracic pacemaker.*
- Assist in minor suturing.*

*Indicates optional skill.

*Intensive Care Unit/Coronary Care Unit (ICU/CCU):* During the experience in the ICU/CCU, the student should have the opportunity to practice under direct supervision and demonstrate proficiency for each of the following:

- Perform patient assessment including developing a pertinent medical history and performing a physical examination. At a minimum, the patient assessment should include a review of the patient's chart, taking vital signs, and auscultation of chest sounds.
- Review all cases including the patient's chart, diagnosis, and treatment.
- Perform peripheral IV insertion.
- Prepare and administer intramuscular, subcutaneous, and IV medications.
- Monitor and interpret EKG's and change monitor leads.
- Draw blood samples.
- Assist in cases of cardiac arrest, including the performance of cardiopulmonary resuscitation, management of the airway, endotracheal intubation, and defibrillation.
- Assist in the care of patients with endotracheal or tracheostomy tubes and patients breathing on respirators.
- Perform urinary bladder catheterization.*

*IV Team:* During the experience with the IV team, the student should have the opportunity to practice under direct supervision and demonstrate proficiency in each of the following:

- Demonstrate aseptic technique.
- Perform peripheral IV insertion using both a straight needle and an over-the-needle catheter device on both adults and, if possible, infants.
- Draw blood samples.
- Prepare blood samples for blood sugar, electrolytes, type and crossmatch, and CBC analysis.

*Operating/Recovery Room:* During the experience in the operating/recovery room, the student should have the opportunity to practice under direct supervision and demonstrate proficiency for each of the following:

- Perform endotracheal intubation.
- Perform peripheral IV insertion.
- Perform aseptic endotracheal and orotracheal suctioning.
- Prepare and administer IV medications and observe effects of pharmacologic agents.

*Indicates optional skill.

- Maintain airway in an unconscious patient using manipulations and position of head, oropharyngeal airways, etc.
- Monitor vital signs of an unconscious patient.
- Monitor the cardioscope and interpret an EKG, noting any irregularities.
- Operate oxygen equipment and assist in the operation of the mechanical respirators.
- Observe and assist in the treatment of various soft-tissue and musculoskeletal injuries.

*Labor Suite:* During the experience in the labor suite, the student should have the opportunity to practice under direct supervision and demonstrate proficiency for each of the following:

- Identify and label the three stages of labor and common complications and abnormal deliveries.
- Assist in normal cephalic deliveries.
- Observe and assist, if possible, in abnormal deliveries.
- Control postpartum hemorrhage by uterine massage and infusion of oxytocin.
- Assist in the management of the newborn, including severing the cord, suctioning, etc.
- Assist in the resuscitation of the newborn.

*Pediatric Unit:* During the experience in the pediatric unit, the student should have the opportunity to practice under direct supervision and demonstrate proficiency for each of the following:

- Perform patient assessment including, at a minimum, a review of the patient's chart, taking vital signs, and auscultation of chest sounds.
- Prepare and administer intramuscular and IV medications.
- Monitor intravenous infusions.
- Assist in the management of febrile and seizure patients.

*Psychiatric Unit:* During the experience in the psychiatric unit, the student should have the opportunity to practice under direct supervision and demonstrate proficiency for each of the following:

- Observe the management and assist in the interview of patients with the following disturbances:

  — Suicidal feelings
  — Hostility and violent behavior

— Acute grief and depression
— Paranoia
— Hysterical conversion
— Alcohol and drug addiction

- Assist in the restraint of combative patients.
- Record the use of drugs used for the treatment of the above-mentioned problems.

*Morgue:* During the experience in the morgue, the student should have the opportunity to observe the following:

- Basic topographic anatomy; identification, pathogenesis, and causes of death.
- Anatomical basis of endotracheal intubation and cardiopulmonary resuscitation.
- Injuries resulting from trauma; specifically, injuries to soft tissues, the musculoskeletal system, and the internal structures.

*Intensive Care Vehicle-Ambulance (ICV-A):** During the experience on the ICV-A, the student should have the opportunity to practice under direct supervision and demonstrate proficiency for each of the following:

- Perform a patient assessment, including developing a relevant medical history, making pertinent observations of the environment, and doing a pertinent physical examination.
- Maintain airway in unconscious patient using manipulations and positions of head, oropharyngeal airway, etc.
- Perform oxygen administration.
- Perform one-person cardiopulmonary resuscitation.
- Perform peripheral IV insertion.
- Draw blood samples.
- Record and interpret EKG's.
- Prepare and administer intramuscular, subcutaneous, and IV medications.
- Identify and manage patients presenting the following problems:

*In areas where supervised experience on the vehicle is not feasible, it is suggested that the student be fully evaluated during the clinical experience and then serve a probationary period on the vehicle. During the probationary period, each case should be reviewed by the medical director with the EMT. The probationary status should be effective until the medical director is satisfied with the EMT's performance. Although this mechanism is not as acceptable as the direct supervision by a preceptor, in some instances it may be necessary.

- — Major trauma to the head/neck, chest, abdomen, spine, and extremities
- — Possible myocardial infarction
- — Congestive heart failure
- — Chronic obstructive pulmonary disease
- — Obstructed airway
- — Diabetic emergencies
- — Asthmatic attack
- — Seizure
- — Coma
- — Obstetric problems
- — Psychiatric problem
- — Overdose
- — Intoxication

- Perform endotracheal intubation.
- Perform aseptic endotracheal and orotracheal suctioning.
- Perform monitored defibrillation.
- Apply the MAST in cases of massive lower extremity trauma or shock.
- Apply rotating tourniquets in cases of acute heart failure.
- Immobilize extremities in cases of fractures or dislocation.
- Monitor vital signs and patient status during transport.
- Perform spinal immobilization using short and long spine board.
- Perform insertion of an esophageal obturator airway.
- Relay patient information to the physician in the correct sequence.
- Assist in receiving calls and dispatching emergency vehicles.
- Relieve tension pneumothorax using a catheter and Heimlich valve.*
- Demonstrate the use of a mechanical heart-lung resuscitator.*
- Perform a subclavian or internal jugular IV insertion.*
- Perform a cricothyroidotomy.*
- Perform transtracheal jet insufflation.*
- Perform a phlebotomy in cases of chronic heart failure.*
- Demonstrate the use of a transthoracic pacemaker.*

*Indicates optional skill.

# APPENDIX C

## COURSE CONTENT OUTLINE

The content outline included in this appendix is a topical outline by module of the training program for the Emergency Medical Technician (EMT)-Paramedic. The outline reflects the criteria established for the EMT-Paramedic by the Task Force on Emergency Medical Technicians, National Academy of Sciences/National Research Council (NAS/NRC). Also included in this outline are optional skills, indicated by an asterisk (*). These skills are not included in the criteria established by the NAS/NRC Task Force, but have been shown effective in field situations when performed by paramedic personnel. They are included as optional materials for consideration and are not included in the overall scope of the course.

**Training Program for the Emergency Medical Technician-Paramedic**

I. The Emergency Medical Technician, His Role, Responsibilities, and Training

1. Role of the EMT
   - 1.1. Health professional
   - 1.2. Health educator
2. Laws governing the EMT
   - 2.1. Relevant laws
   - 2.2. Pertinent definitions
   - 2.3. Malpractice insurance
   - 2.4. Records and reporting forms
3. Orientation to the EMT training program
   - 3.1. Course content
   - 3.2. Course format
   - 3.3. Student requirements
4. Issues concerning the health professional
   - 4.1. Medical ethics
   - 4.2. Death and dying

II. Human Systems and Patient Assessment

1. Medical terminology
2. Human systems
   - 2.1. Study of human systems

2.2. Systems balance (homeostasis)
2.3. Basic unit of life—cell
2.4. Anatomic terminology
2.5. Tissue
2.6. The body structure
2.7. The moving force—muscles
2.8. Basis for fuel consumption-respiratory system
2.9. The input system—digestive system
2.10. Distribution—circulatory system
2.11. Renal system
2.12. The control system—nervous system
2.13. Reproductive system
2.14. Remote control—the endocrine system

3. Patient assessment
   3.1. Patient assessment
   3.2. Acquisition of patient history
   3.3. Examination for trauma-related problems
   3.4. Evaluation of diagnostic signs
   3.5. Examination for suspected medical problem
   3.6. Four components of assessment (order)
   3.7. Presenting medical information
4. Clinical experience

III. Shock and Fluid Therapy

1. Fluids and electrolytes
   1.1. Body fluids
   1.2. Electrolytes
   1.3. Osmosis
   1.4. Acid-base balance
2. Blood and its components
   2.1. The blood
   2.2. Components of the blood
   2.3. Blood transfusions
3. Disorders of hydration
   3.1. Dehydration
   3.2. Overhydration
4. Shock
   4.1. Shock—causes and types
   4.2. Patient assessment for shock

4.3. Clinical signs and symptoms
4.4. General treatment

5. Techniques of management
   5.1. Peripheral intravenous (IV) insertion
   5.2. Military Anti-Shock Trousers
   5.3.* External jugular, internal jugular, and subclavian IV insertion
6. Clinical experience

IV. General Pharmacology

1. Drug information
   1.1. Introduction
   1.2. Source of drugs
   1.3. Drug names
   1.4. Drug standards and legislation
   1.5. Drug forms
   1.6. *Physicians' Desk Reference* (PDR)
2. Action of drugs
   2.1. Introduction
   2.2. Factors that influence actions of drugs
   2.3. Terms used to describe drug action
   2.4. Drugs affecting parts of the body
   2.5. Drugs affecting the autonomic nervous system
   2.6. General drug information
3. Weights and measures
   3.1. Introduction
   3.2. Systems of measurement
   3.3. The metric system
   3.4. Calculating drug concentrations
4. Administration of drugs
   4.1. Introduction
   4.2. Administration of drugs
   4.3. Safety considerations and procedures
   4.4. Local guidelines
5. Techniques of administration
   5.1. Introduction
   5.2. The syringe and scales
   5.3. Withdrawing medications
   5.4. Routes of administration

*Optional skill.

V. Respiratory System

1. Anatomy and physiology
   - 1.1. Anatomical structure
   - 1.2. Mechanics of respiration
2. Patient assessment
3. Pathophysiology and management
   - 3.1. Introduction
   - 3.2. Respiratory depression and respiratory arrest
   - 3.3. Upper airway obstruction
   - 3.4. Obstructive airway disease
   - 3.5. Toxic inhalations and aspirations
   - 3.6. Near drowning
   - 3.7. Pulmonary edema
   - 3.8. Hyperventilation syndrome
   - 3.9. Pulmonary embolism
   - 3.10. Chest trauma
4. Techniques of management
   - 4.1. Oxygen administration
   - 4.2. Use of adjuncts
   - 4.3. Demand-valve unit
   - 4.4. Suctioning
   - 4.5. Use of nebulizers
   - 4.6. Direct laryngoscopy
   - 4.7. Endotracheal intubation
   - 4.8. Esophageal obturator airway
   - 4.9.* Thoracic decompression
   - 4.10.* Positive-end expiratory pressure
   - 4.11.* Cricothyroidotomy
   - 4.12.* Transtracheal jet insufflation
5. Clinical experience

VI. Cardiovascular System

1. Anatomy and physiology
   - 1.1. Introduction
   - 1.2. The heart
   - 1.3. Structure of the heart
   - 1.4. Circulation through the heart
   - 1.5. Circulation

*Optional skill.

1.6. Heart valves
1.7. Heart muscle contraction
1.8. Function of the heart
1.9. Blood vessels

2. Patient assessment
   2.1. History in the cardiac patient
   2.2. Past medical history
   2.3. Physical examination

3. Pathophysiology and management of cardiovascular problems
   3.1. Introduction
   3.2. Diseases to coronary arteries and other heart problems, including:
      a. Coronary artery disease
      b. Angina
      c. Acute myocardial infarction
      d. Congestive heart failure
      e. Ventricular aneurysm
      f. Cardiac rupture
      g. Cardiogenic shock
      h. Syncope
      i. Myocardial trauma
      j. Acute hypertensive crisis

4. Reading and understanding a normal electrocardiogram (EKG)
   4.1. Introduction
   4.2. An EKG record
   4.3. EKG paper
   4.4. Reading an EKG

5. Arrhythmia recognition
   5.1. Introduction
   5.2. Reading arrhythmias, including:
      a. Normal sinus rhythm
      b. Sinus arrhythmia
      c. Sinus bradycardia
      d. Sinus tachycardia
      e. Sinus arrest
      f. Premature atrial contraction
      g. Superventricular tachycardia
      h. Atrial flutter
      i. Atrial fibrillation
      j. 1° block
      k. 2° block

l. 3° block
m. Premature ventricular contractions
n. Ventricular fibrillation
o. Ventricular tachycardia
p. Asystole
q. Pacemaker rhythm

6. Techniques of management
   6.1. Introduction
   6.2. Description of drugs
   6.3. EKG monitoring
   6.4. Arrhythmias and treatments
   6.5. Techniques and procedures, including:
      a. Management of cardiac arrest
      b.* Cardioversion
      c.* Rotating tourniquets
      d.* Intracardiac injections
      e.* Mechanical cardiopulmonary resuscitation devices
7. Clinical experience

VII. Central Nervous System

1. Anatomy and physiology
2. Patient assessment
   2.1. Introduction
   2.2. History
   2.3. Physical examination (head injury)
   2.4. Physical examination (spinal injury)
3. Pathophysiology and management
   3.1. Head trauma
   3.2. Spinal injury
   3.3. Medical problems
4. Techniques of management
   4.1. Application of traction and cervical collar
   4.2. Complete immobilization of patient
   4.3. Management of diving accidents
   4.4. Use of long spine board and orthopedic stretcher

VIII. Soft-Tissue Injuries

1. Anatomy and physiology of the skin

*Optional skill.

2. Patient assessment
3. Pathophysiology and management of soft-tissue injuries
   3.1. Mechanical injuries
   3.2. Burns
4. Techniques of management
   4.1. Dressing and bandaging
   4.2. Controlling external hemorrhage
   4.3. Internal hemorrhage
   4.4. Dressing and bandaging wounds
   4.5. Burns
5. Special considerations in soft-tissue injuries
   5.1. Emergencies involving the eye
   5.2. Emergencies involving face, ear, nose, and throat
   5.3. Injuries to the abdomen
6. Clinical experience

IX. Musculoskeletal System

1. Anatomy and physiology
   1.1 The musculoskeletal system
   1.2. Bones
   1.3. Joints
   1.4. Muscles
   1.5. Related pulses
2. Patient assessment
   2.1. Evaluation of a patient
   2.2. Mechanisms of injury
   2.3. Patient history
   2.4. Physical examination
3. Pathophysiology and management
   3.1. Fractures
   3.2. Dislocations
   3.3. Sprains
   3.4. Strains
4. Techniques of management
   4.1. Splinting and immobilization
   4.2. Splints
5. Clinical experience

X. Medical Emergencies

1. Diabetic emergencies

1.1. Diabetic ketoacidosis
1.2. Hypoglycemic reaction
2. Anaphylactic reactions
3. Exposure to environmental extremes
3.1. Heat: heat cramps, heat exhaustion, heat stroke
3.2. Cold: frostbite, general cooling, and hypothermic cardiac arrest
4. Alcoholism and drug abuse
5. Poisoning and overdose
6. Acute abdomen
7. Genitourinary problems
8. Medical emergencies in the geriatric patient
9.*Aquatic emergencies
10.*Techniques of management
10.1.* Nasogastric tube insertion
10.2.* Urinary catheterization

XI. Obstetric/Gynecologic Emergencies

1. Anatomy and physiology
1.1. Anatomy of the female reproductive system
1.2. Pregnancy
2. Patient assessment
2.1. Diagnosis of pregnancy
2.2. Gynecologic problems
3. Pathophysiology and management of gynecologic emergencies
4. Pathophysiology and management of obstetric emergencies
4.1. Introduction
4.2. Antepartum hemorrhage complications
4.3. Other antepartum complications
4.4. Normal delivery
4.5. Complications of delivery
4.6. Abnormal deliveries
4.7. Other childbirth situations
a. Multiple births
b. Premature births
4.8. Apgar scoring
5. Techniques of management
6. Clinical experience

*Optional skill.

XII. Pediatrics and Neonatal Transport

1. Approach to the pediatric patient
2. Pathophysiology and management
   - 2.1. Respiratory emergencies
   - 2.2. Sudden infant death syndrome
   - 2.3. Seizures
   - 2.4. The battered child
3. Techniques of management
   - 3.1. Cardiopulmonary resuscitation
   - 3.2. Intravenous techniques
   - 3.3. Endotracheal intubation
4.* Neonatal transport
5. Clinical experience

XIII. Emergency Care of the Emotionally Disturbed

1. Emotional aspects of illness and injury
   - 1.1. Emotional disturbance
   - 1.2. Responses of the patient
   - 1.3. Responses of the family, friends, or bystanders
   - 1.4. Responses of the paramedic
   - 1.5. Responses to mass casualties
2. Approach to the patient
   - 2.1. Field problems of assessment
   - 2.2. Mental status assessment
3. Psychiatric emergencies
   - 3.1. Depression
   - 3.2. Suicide
   - 3.3. Rage, hostility, and violent behavior
   - 3.4. Paranoid reactions
   - 3.5. Phobias
   - 3.6. Hysterical conversion reaction
   - 3.7. Disorganization and disorientation
4. Techniques of management
   - 4.1. Interview techniques
   - 4.2. Violence containment
   - 4.3. Use of local resources
5. Clinical experience

*Optional skill.

## XIV. Extrication/Rescue Techniques

(Level of rescue expertise required by the emergency medical technician is left to local option. General guidelines are provided in this module.)

## XV. Telemetry and Communications

1. EMS communications systems
   - 1.1. System phases
   - 1.2. System components
   - 1.3. Radio communications: voice and telemetry
2. Communications regulations and procedures
   - 2.1. Federal Communications Commission
   - 2.2. Protocols and communications procedures
   - 2.3. Dispatch procedures
   - 2.4. Relaying information to the physician

# APPENDIX D

## SUGGESTED INSTRUCTIONAL TIME BY MODULE

The emphasis of this training program has been on the development of student competencies irrespective of the number of hours required to develop those competencies. Further, the program allows for flexibility with respect to the level of knowledge required and the types of intermediate levels that can be identified.

To explain further the problem of designating hours for the training program, the following facts are presented. In a survey of some 30 training programs, each claiming the development of an advanced-level Emergency Medical Technician (EMT), the number of required classroom hours ranged from 68 to 720, with a mean of 228 hours. The clinical experience had an equivalent variance, with a range of 16–800 hours and a mean of 345 hours. As can be seen, different States and different institutions felt different amounts of time were required to complete the training.

Because of variances in training requirements, it is recommended that the medical director and course coordinator evaluate the program and determine the number of hours they feel is appropriate. Further, keep in mind that the number of hours selected is but a reference to be used when planning the course and should not be used as a measure of successful completion.

Table D1 provides the average number of hours needed to present each module. These hours should not be considered absolute, but should be used merely as a reference for planning only.

The required number of hours of clinical experience must also be determined by the State or institution. Such factors as the skills to be mastered by the EMT, patient availability in the clinical areas, and the number of trips of the ambulance provider must be taken into consideration. As a general guideline, the EMT should have adequate exposure to patients in each clinical area so that he can develop skill proficiency. As mentioned previously, the number of hours required for the clinical experience ranges from 16 to 800 hours in other systems. Because of the great variation, no hours are suggested for the clinical experience.

It has been estimated by many professionals that the training can be provided and competencies achieved within a range of 500–800 hours of instruction.

Table D1.—*Average hours by module*

| | Module | Average hours* |
|---|---|---|
| I | The Emergency Medical Technician | 3.0 |
| II | Human Systems and Patient Assessment | 10.0 |
| III | Shock and Fluid Therapy | 12.0 |
| IV | General Pharmacology | 9.0 |
| V | Respiratory System | 27.0 |
| VI | Cardiovascular System | 48.0 |
| VII | Central Nervous System | 12.0 |
| VIII | Soft-Tissue Injuries | 10.0 |
| IX | Musculoskeletal System | 10.0 |
| X | Medical Emergencies | 12.0 |
| XI | Obstetric/Gynecologic Emergencies | 12.0 |
| XII | Pediatrics and Neonatal Transport | 8.0 |
| XIII | Emergency Care of the Emotionally Disturbed | 8.0 |
| XIV | Extrication/Rescue Techniques | (local option) |
| XV | Telemetry and Communications | 4.0 |
| | Total | 185.0 |

*Excluding clinical experience.

# APPENDIX E

## PREREQUISITES AND SAMPLE SCHEDULING

The course is designed to be given either as a full-time or part-time program. For full-time professional ambulance personnel, a full-time schedule may be appropriate. The professional part-time and volunteer ambulance personnel, however, because of limited time, require a program that can be presented in the evenings and on weekends in segments over an extended period of time. Further, many areas, although interested in providing some type of advanced emergency care, do not have the need, manpower, or financial support to facilitate a full training program for Emergency Medical Technician (EMT)-Paramedics.

To deal with these situations, program materials have been developed to allow flexibility in scheduling. The training materials are divided into 15 modules. Each module is a complete self-contained package directed toward the attainment of skills and knowledge in a given subject area. By grouping the modules in specific ways, intermediate levels can be identified with specific emphasis. For example, if the local medical community wishes to present a course that emphasizes primarily coronary care, it can select a shortened version of the training program for the EMT-Paramedic. This shortened course could include:

| | |
|---|---|
| Module I | The Emergency Medical Technician |
| Module II | Human Systems and Patient Assessment |
| Module III | Shock and Fluid Therapy |
| Module IV | General Pharmacology |
| Module V | Respiratory System |
| Module VI | Cardiovascular System |
| Module XV | Telemetry and Communications |

This course would include those skills necessary for advanced coronary care in the field. Although the students completing this particular intermediate program would not meet the criteria for EMT-Paramedic as established by the National Academy of Sciences/National Research Council Task Force, the program would be appropriate for that specific region. In most instances, it is anticipated that State legislation will reflect intermediate levels that meet the needs of their particular area.

If the entire program is not to be presented, the following procedure could be used for determining the class content and schedule:*

- Determine those modules that are to be included in the program.
- Determine the requisites and prerequisites for each module to be included in the course. Table E1 identifies the requisites by module. For example, in reviewing the table let us assume that Module VI is selected as a primary module. According to the table, Modules I-V and XV should be included as a segment of the training program.
- Once a complete course outline has been developed using the modules, determine the length of the total program by calculating the number of hours required for presenting the program. This should be done by the course coordinator and medical director reviewing the *Instructor Lesson Plans* and determining the amount of time required. Appendix D includes a chart describing the average time required to present each module. It is suggested, however, that this chart be used only as a reference for planning purposes.
- Determine the schedule for the proposed class. The order of presentation of the modules should follow their presentation in the training materials, but it is not absolutely necessary. For example, if the first six modules are to be presented as a training program, it is entirely feasible that Module VI, Cardiovascular System, could be presented before Module V, Respiratory System, if the medical director and course coordinator choose to do so.
- Once the course content has been determined and the skills identified, it will be necessary to evaluate the clinical experience required by each student. Again Table E1 indicates the clinical areas associated with each module. The medical director and course coordinator will determine the number of hours required in each unit. The number of hours required should be based on the skills to be practiced by the student and the patient availability within those units. Again, as with the training program, the evaluation of the student should be based on his competency rather than on the number of hours spent in a given specialty unit.

The identification of intermediate levels within the EMT-Paramedic training program is limited only by the requirement that all prerequisites and clinical experiences be met (Table E1). To illustrate further the flexibility of the materials, the following list of intermediate levels is presented, but is not intended to be all-inclusive.

*In many instances, the State will have identified intermediate levels that qualify for State certification. It will be necessary to explore this possibility.

- Assuming that the medical director and course coordinator are interested in having individuals trained in intravenous (IV) therapy, the intermediate level would include:

  Module I The Emergency Medical Technician
  Module II Human Systems and Patient Assessment
  Module III Shock and Fluid Therapy
  Clinical Experience:
  Emergency Department
  IV Team
  Intensive Care Unit
  Morgue

- Assuming that the medical director and course coordinator have selected a training program that is primarily trauma oriented, the program would include:

  Module I The Emergency Medical Technician
  Module II Human Systems and Patient Assessment
  Module III Shock and Fluid Therapy
  Module VII Central Nervous System
  Module VIII Soft-Tissue Injuries
  Module IX Musculoskeletal System
  Clinical Experience:
  Emergency Department
  Intensive Care Unit
  Operating Room
  IV Team
  Morgue

Further, in examining the modular concept in the development of the training materials, it is possible for the individual to begin with some intermediate level (i.e., training in IV therapy, Modules I-III) and then, over an extended period of time, continue his training in each of the remaining modules. This allows the part-time professional or volunteer provider to continue his training and reach the EMT-Paramedic level within the scope of his time availability.

Table E1.—*Requisites and clinical experience by module*

| Module | Requisite by module | | | | | | | | | | | | | | | Clinical experiences | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII | XIII | XIV | XV* | Emergency department | Intensive care unit/ coronary care unit | Operating room | IV team | Obstetrics | Pediatrics | Psychiatrics | Morgue | Intensive care vehicle-ambulance |
| I The Emergency Medical Technician | | | | | | | | | | | | | | | | X | X | | | | | | X | |
| II Human Systems and Patient Assessment | X | | | | | | | | | | | | | | | X | | X | X | | | | | |
| III Shock and Fluid Therapy | X | X | | | | | | | | | | | | | | | X | | | | | | | |
| IV General Pharmacology | X | X | X | | | | | | | | | | | | | | X | X | | | | | X | |
| V Respiratory System | X | X | X | X | | | | | | | | | | | | | | | | | | | | |
| VI Cardiovascular System | X | X | X | X | X | | | | | | | | | | X | X | X | | | | | | X | |
| VII Central Nervous System | X | X | X | | X | | | | | | | | | | | X | | X | | | | | | |
| VIII Soft-Tissue Injuries | X | X | X | | X | | X | | | | | | | | | X | | X | | | | | | |
| IX Musculoskeletal System | X | X | X | | X | | X | X | | | | | | | | X | | X | | | | | | |
| X Medical Emergencies | X | X | X | | | | | | | | | | | | | | | | | X | | | | |
| XI Obstetric/Gynecologic Emergencies | X | X | X | | | | | | | | | | | | | | | | | | X | | | |
| XII Pediatrics and Neonatal Transport | X | X | X | | | | | | | | | | | | | | | | | | | X | | |
| XIII Emergency Care of the Emotionally Disturbed | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| XIV Extrication/Rescue Techniques | X | X | | | | | | | | | | | | | | | | | | | | | | |
| XV Telemetry and Communications | | | | | | | | | | | | | | | | | | | | | | | | |

*The module dealing with communications should be included in any training program.

# APPENDIX F

## RECOMMENDED MINIMUM EQUIPMENT

| Item | No. | Module | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII | XIII | XIV | XV |
| Stethoscope (one per student) | 20 | | X | | | X | X | | | | | | X | | | |
| Sphygnomanometer (one per four students) | 5 | | X | | | X | X | | | | | | | | | |
| Examination lights (one per student) | 20 | | X | | | X | X | X | X | | | | X | | | |
| Winged infusion needles (one per student) | 20 | | | X | | | | | | | | | X | | | |
| Catheter-over-needle device (one per student) | 20 | | | X | | X | | | | | | | | | | |
| Administration sets | 20 | | | X | | | | | | | | | | | | |
| Intravenous solutions | 20 | | | X | X | | | | | | | | | | | |
| Alcohol swabs (one box) | 1 | | | X | X | | X | | | | | | | | | |
| Adhesive tape (three rolls) | 1 | | | X | | | | X | | | | | | | | |
| Padded arm boards | 5 | | | X | | | | | | | | | | | | |
| Rubber tubing tourniquets | 10 | | | X | | | | | | | | | | | | |
| Blood sample vacutubes | 20 | | | X | | | | | | | | | | | | |
| Military Anti-Shock Trousers | 2 | | | X | | | | | | | | | | | | |
| Disposable syringes | 40 | | | | X | | | | | | | | | | | |
| Vials of sterile water | 5 | | | | X | | | | | | | | | | | |
| Ampules of sterile water | 5 | | | | X | | | | | | | | | | | |
| Oxygen tanks with reduction valves | 2 | | | | | X | X | | | | | | | | | |

| Item | No. | Module | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII | XIII | XIV | XV | XVI |
| Nasal cannulas | 20 | | | | | X | | | | | | | | | | | |
| Oxygen masks (venturi masks) | 10 | | | | | X | | | | | | | | | | | |
| Oxygen masks with rebreather bags | 10 | | | | | X | | | | | | | | | | | |
| Oropharyngeal airways | 5 | | | | | X | X | | | | | | | | | | |
| Bag-valve mask | 2 | | | | | X | X | | | | | | | | | | |
| Portable suction unit/Yankauer and French style catheters | 2 | | | | | X | X | | | | | | | | | | |
| Esophageal obturator airway | 2 | | | | | X | X | | | | | | | | | | |
| Pocket masks | 10 | | | | | X | X | | | | | | | | | | |
| Laryngoscope with blades | 2 | | | | | X | | | | | | | | | | | |
| Intubation tubes | 4 | | | | | X | | | | | | | | | | | |
| Magill forceps | 2 | | | | | X | | | | | | | | | | | |
| Cricothyrotome* (disposable scalpel No. 11 blade) | 2 | | | | | | | | | | | | | | | | |
| Heimlich valves* | 2 | | | | | X | | | | | | | | | | | |
| Postive-end expiratory pressure devices* | 2 | | | | | X | | | | | | | | | | | |
| Pressure-cycled respirator (e.g., Bird)* | | | | | | X | | | | | | | | | | | |
| Volume-cycle respirator (e.g., MA-1, Ohio, Emerson)* | | | | | | X | | | | | | | | | | | |
| EKG monitor and patient leads | 2 | | | | | | X | | | | | | | | | | |
| Portable defibrillator/ cardioscope | 2 | | | | | | X | | | | | | | | | | X |
| Tourniquets | 6 | | | | | | X | | X | | | | | | | | |

| Item | No. | Module | | | | | | | | | | | | | | |
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| Transthoracic pacemaker* | 1 | | | | | | X | | | | | | | | | | |
| Phlebotomy tray* | 1 | | | | | | X | | | | | | | | | | |
| Mechanical heart-lung resuscitator* | 1 | | | | | | X | | | | | | | | | | |
| Saline pads (one box) | 1 | | | | | | X | | | | | | | | | | |
| Cervical collars (one set) | 2 | | | | | | | X | | | | | | | | X | |
| Short spine boards with straps | 2 | | | | | | | X | | | | | | | | X | |
| Long spine board with straps | 2 | | | | | | | X | | | | | | | | X | |
| Triangular bandages | 20 | | | | | | | X | X | X | | | | | X | X | |
| Orthopedic stretcher | 1 | | | | | | | X | | | | | | | | X | |
| Gauze dressings | 40 | | | | | | | | X | | | | | | | | |
| Multitrauma dressings | 40 | | | | | | | | X | | | | | | | | |
| Gauze roller bandages | 20 | | | | | | | | X | X | | | | | | | |
| Elastic roller bandages | 20 | | | | | | | | X | X | | | | | | | |
| Burn sheets | 5 | | | | | | | | X | | | | | | | | |
| Paper cups | 10 | | | | | | | | X | | | | | | | | |
| Aluminum foil (single roll) | 1 | | | | | | | | X | | | | | | | | |
| Suture tray* | 1 | | | | | | | | X | | | | | | | | |
| Air splints (complete set) | 1 | | | | | | | X | | X | | | | | | | |
| Board splints (complete set) | 1 | | | | | | | | | X | | | | | | | |
| Hare traction splints | 2 | | | | | | | | | X | | | | | | | |
| Blankets | 10 | | X | | | | | X | X | X | X | X | X | X | X | X | |
| Nasogastric tubes (assorted sizes)* | 20 | | | | | | | | | | X | | | | | | |

| Item | No. | Module | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII | XIII | XIV | XV |
| Lubricating jelly | 2 | | | | | | | | | | X | | | | | |
| Urinary catheters* | 10 | | | | | | | | | | X | | | | | |
| Sterile gown and gloves | 20 | | | | | | | | | | X | | | | | |
| Disposable obstetrics kit | 2 | | | | | | | | | | | X | | | | |
| Isolette* | 1 | | | | | | | | | | | | X | | | |
| Restraining straps | 5 | | | | | | | | | | | | | X | | |
| Telemetry unit | 1 | | | | | | X | | | | | | | | | X |
| Ambulance/hospital communications | 1 | | | | | | | | | | | | | | | X |
| Ambulance | 1 | | | | | | X | | | | | | | | | |
| Educational equipment: | | | | | | | | | | | | | | | | |
| Venous practice arms | 4 | | | X | | | | | | | | | X | | | |
| Arrhythmia Anne | 1 | | | | | | X | | | | | | | | | X |
| Intubation manikins (adult) | 2 | | | | | X | | | | | | | X | | | |
| Intubation manikins (infant) | 1 | | | | | X | | | | | | | X | | | |
| Resusci-Anne | 4 | | | | | X | X | | | | | | | | | |
| Anatomical model | 1 | | X | | | X | X | X | X | X | X | X | | | | |
| Chalkboard | 1 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Movie projector | 1 | based on local need | | | | | | | | | | | | | | |
| Slide projector | 1 | based on local need | | | | | | | | | | | | | | |
| Screen | 1 | based on local need | | | | | | | | | | | | | | |

*Indicates equipment needed for optional skill.



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